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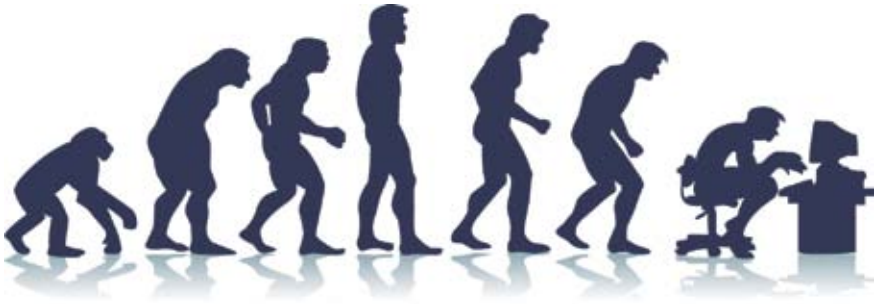
September 2011



Transitions
Übergänge

Magazin des Vereins der Informatik Studierenden an der ETH Zürich (VIS)

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Editorial

Mit der letzten Ausgabe zum Thema Sprachen im Hinterkopf nehme ich es mir mal zum Anlass, diesmal auch unser englisch sprechendes Publikum zu begrüssen. Passt auch zum neuen Thema: Übergänge! Für unsere neuen Erstis im Bachelor geht es auf in die weite Welt des universitären Lebens, und unsere neuen Master-Studenten müssen zumindest lernen, sich in der Schweiz und an der ETH zurechtzufinden. Ich hoffe, ihr alle könnt von den Informationen in den Visionen profitieren, und wünsche euch viel Glück bei euren Studien.

Eine kleine organisatorische Mitteilung: Wegen einer internen Datenbankumstellung der Informatikdienste bekommen Mitarbeiter des D-INFK ihre Visionen eventuell nicht zugestellt, oder ihre Ausgabe landet beim Sekretariat ihres Institutes. Wir entschuldigen uns für die entstehenden Unahnnehmlichkeiten, und halten auf jeden Fall einige Mitnehmexemplare zusätzlich im VIS-Büro (CAB E 31) und im Zeitschriftenständer vor der Loge im CAB bereit.

Keeping in mind the last edition on the topic of languages, and fittingly for this edition›s topic of "Transitions", I would like to welcome for the first time our English-speaking readership. Our Bachelor "Erstis" are embarking on a journey into the wide world of university life, and our new Master students at least have to get accommodated to Switzerland and the ETH. I hope that all of you can profit from the information in the Visionen and wish you good luck with your studies.

A small organizational note: Due to an internal database restructuring by the IT Services of the ETH, employees of D-INFK might not receive their Visionen at all, or their edition might be addressed to the secretariat of their institute. We apologize for any inconveniences caused, and will keep several editions available for pickup at the VIS office (CAB E 31) as well as on the magazine stand at the lounge on the F floor of CAB.

Euer Chefredaktor,

Rudolf Schreier

Inhalt

Transitions || Übergänge

Berichte

Studium

Spass

Mastering being a Bachelor

RMS – SOON-TO-BE CERTIFIED BACHELOR OF SCIENCE AND ACTUAL BACHELOR

Disclaimer

Whenever "the bachelor/master programme" is mentioned, the author is referring to the 2008 Bachelor's programme and the 2009 Master's programme. These apply to everyone starting their degree in autumn of 2011 and later. Please check carefully which degree you are enrolled in before reading this article.

With multiple versions of the programme regulations in different languages flying around, it can sometimes be difficult to keep a clear head when transferring from the ETH bachelor to the ETH master. This article might help you with a few interesting questions; it is not supposed to be a reference guide, and if you have further questions, please refer to the study guide and programme regulations at [1] or – if you are still unclear on some points – ask at the Student Administration in CAB F 64.1, or Studies Coordination in CAB F 64.2.

BSc Clean-up

While the required number of CP for the Bachelor's degree is 180, up to 190 CP can be taken into account and listed on your diploma. Any CP beyond that can be listed on a supplementary sheet on the student's request.

If you plan to change university, or urgently need your Bachelor's diploma, please take into account that at times of high demand, meaning especially after the exam session, it can take up to 8 weeks for the whole process to complete – so do plan ahead.

When to claim your BSc title

You might ask yourself: "What do you mean, you wouldn't claim your Bachelor's diploma as soon as you have earned 180CP?". The choice is actually founded in the fact that some Master's courses are also offered in the Bachelor's programme. If you take a careful look at the weighted grades you receive in both programmes, you will realize that you might want to shift courses forwards, backwards or between course categories to maximize your grades, or alternatively, emphasize or distance yourself from certain courses.

The focus areas

The seven available focus areas are Distributed Systems, Information Systems, Software Engineering, Computational Science, Visual Computing, Information Security, and Theoretical Computer Science. If you choose any one of these, you constrict yourself in the selection of offered courses, but gain a deeper insight into that area.

➔

The alternative is choosing your "focus" to be General Studies, which allows you to pick any of the courses offered in the seven focuses in their respective categories. It is, however, not recommended to pick courses from more than two or three focus areas – and with only 60 lecture CP available, you would even have a hard time doing so.

It is your choice to weigh up the advantages of specialization versus versatility.

Mobility

While in the 180CP Bachelor's programme, up to 60CP could be earned during an exchange, the maximum for the Master's programme is 15CP – less than one full semester's worth. To get the most of an exchange semester, you thus should either combine 15CP worth of courses with an part-time internship, or, alternatively, take 30CP worth of courses, of which 15CP can count towards your Bachelor's degree. ⌥

Important Deadlines

- Matriculation: 2.10.2011
- End of exam registration period: 14.10.2011
- Hand-in of the signed Master Plan: 23.12.2011
- Maximal duration of Master studies (voluntary internship not included): Summer 2015

Links

[1] http://www.inf.ethz.ch/education/bachelor/formulare_dokumente

A New Beginning at ETH

DER-YEUAN YU – DOES NOT ALWAYS KNOW WHAT HE'S DOING

One of the most exciting transitions in life occurs when we embark on an adventure on a new campus. We are all aware of the academic challenges, but what about the life here? In this article I share some of my experiences as a foreign master student over the past year, in hope to provide an insight to what a newcomer should expect, here at ETH Zurich.

Professional Endeavours

Let's start with the serious stuff: studying. By the time you are reading this article, you probably have already realized that the fantasies of going on Euro-trips every weekend are miserably squashed by the weekly exercises of your courses. School is even considerate enough to enrich our vacations by allocating always the last month to session exams. Such exams are particularly exciting because they are mostly your one-time shot to be evaluated. The entire arrangement somehow portrays one's diligence when returning home to friends during the vacation whilst still having to study every day. Luckily, people are usually able to adjust to the rhythm of constant studying after the first semester and are ready to expect exactly the same in the second. However, if you are hungry for more work, you could also contact the research groups and ask for some research projects to participate in.

To relieve the pressure throughout the semester, the VIS has offered a wide range of activities and excursions. To name a few, the FIGUGEGL[1] event is when we make an entire wing of CAB smell like cheese, the Christmas Brunch serves food sufficient for nice winter hibernation, VISKAS is the epic barbecue by the lake, and we have the Nerd Party, because, well, where else are you going to find such a high concentration of nerds?

➔

Early in the spring semester, VIS organizes the Kontaktparty, where companies show off their broad range of job vacancies, including internships, which seems to be kind of a deal here. Though it is always quite a challenge to land an internship, it would not hurt to look around, suit up for some interviews, and hopefully getting shot down only once or twice. Even if you're not into professional outlooks, almost all students get psyched about the possible freebies they might get. People have walked away from the KP with chocolates, memory sticks, solar chargers, Rubik's cubes, and even flower plants! Kind of a fruitful loss of focus, huh?

Survival

The human brain consumes up to 25% of the total body energy, so now that coursework is out of the way, let's talk about food! This is Zürich[2], so personal budgeting would be the first issue when it comes to pretty much everything. As a student potentially starting an independent life, one could take the noble road of learning to cook delicious, exotic food, having some to share with friends, and thereby enjoying an elevated popularity in the dorm. However, it turned out to be easier and less time-consuming for me to transition from exquisite Asian cuisine to pasta with tomato sauce, which demands a high discipline of self-persuasion that having the same dinner menu every day never gets old.

Culture and Life

I'm just going to point out the best part. A few months into my stay, I had learned from the recurring photos on the daily tabloids that protesters here seem to have a hard time keeping their clothes on. As an international student, I have learned to appreciate the culture here and try my very best to fit in, while living under the constant fear of being swept at table football[3].

ETH is a place where you can always expect to start up a chat with anyone, be it during a coffee break at the lounge or even in the computer room on a holiday night. I find it useful to study efficiently at home so that you are always ready to socialize at school. Be sure to also make use of that compulsory ASVZ membership and enjoy

a wide range of sports activities, from parkour lessons at the Sports Center in Hönggerberg to sleeping (they call it power napping) at the Relax in our precious CAB.

Recent studies[4] have shown that human beings are looking at a shorter life span due to the constant sitting on our butts. Luckily, Switzerland offers an assortment of outdoor activities for you to break some bones. Enjoy a swim down the Limmat and earn a free duckie, quench your desire for speed by skiing, or re-discover the colourful world after spending two nights in the Hölloch, one of the largest caves in the world.

Cut to the chase: what's the most humiliating thing you've done here?

It goes without admitting that everybody always does something stupid in a foreign environment. Mine occurred when attending an interview for a vacant room in a student house before I understood what the word 'weiblich' means. Well, everybody has a story to tell when it comes to house hunting, right?

No More Spoilers

The Master program here at ETH means business. Aside from telling you that it's normal to lead a weekend-deprived life, a tip the author would like to share is to a walk down to the Polyterrace at around 7 PM, where the sunset over Zurich is always a pleasant sight.

As an exercise, the reader is left with a lot more to explore in this place. Just a final piece of advice for international students, be good and stick to the rules, balance between work and play, and I am sure you would have more to share next year.

Embrace changes. Enjoy. ⌥

Links

[1] 'Fondue isch guet und git e gueti Luune,' meaning the obvious: Fondue makes you happy.

[2] http://www.ubs.com/1/e/about/news?newsId=194278

[3] In table football, if one loses without even scoring a goal, crawling under the table is notoriously obligated amongst certain cultures.

[4] http://www.medicalbillingandcoding.org/sitting-kills/

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New Ideas For A Bright Future Of Software Development

DANIEL THOMAS — BUDDING SOFTWARE DEVELOPER

Writing software isn't just about mere coding anymore. Large software projects demand bureaucracy, (micro-) management and people with MBAs who may not know anything about how a computer works but nevertheless have a lot to say about how it should be used. Here we enter the realm of *software development methodologies*, an utopia for buzz words and seemingly creative ideas where instant fame can be achieved by stating the obvious.

Nowadays you can choose (or, more likely have somebody choose for you) to program like a waterfall, go round on a spiral, create prototypes or just be rapid in some way or another. You can be agile, lean or even SCRUM (whatever that means, Wikipedia tells us the name has something to do with the noble sport of rugby). In this article I modestly propose a few new ways how software could be produced, in a vain hope to advance software engineering to a new level and help companies in the transition to a better tomorrow.

The No-Water-may-fall Model

Lets face it: many software development projects fail. They fail miserably. Why not use that to your advantage? And here's how it goes: just don't code. Under no circumstances ever write a single line of code. Instead, make sure that you have excellent slides, wonderful presentations of proposed features, buzz word filled reports and generally provide your boss the illusion that you are doing really profound work which he/she can report to a level higher. Then just sit back and wait for the project to be cancelled. If that doesn't happen, be sure that at some point in time the requirements are going to be changed to such a degree that anything you may have written until then (which is by definition exactly nothing) will be of no worth. Then start the next cycle of the No-Water-may-fall Model. It is crucial that you never have any working prototype or even a mock interface which would suggest that the project is near to completion, which would inevitably raise the expectations for the project. High expectations are your enemy, just appear to be a responsible and hard working engineer and loudly express your anger at the continuous cancellations of your beloved projects.

Effectiveness: ★☆☆☆☆
Efficiency: ★★★★★

The Extreme Testing Model

Test-driven development showed us how continuous testing can help writing software. But why not take this concept to the next level? First write all tests that the software will ever ➔

have to pass. Then sit back and let a modified markov text generator produce random code until you have a program that passes all tests. Well, it is clear that this approach may take some time, but as long as you're computers are running it is almost guaranteed to succeed on the long run. Additionally, time and Moore's Law are working for you making sure that the efficiency of this approach will rise exponentially. Scientifically minded engineers can also make use of an infinite number of monkeys which will surely impress management by effectively using a biological computer to do your work. Also, you get the complete works of William Shakespeare as added bonus.

Effectiveness: ★★★★★
Efficiency: ★☆☆☆☆

The Intelligent Design Model

As a programmer you probably consider yourself intelligent. Your self-conception of intelligence lies at the heart of this model which has 2 phases. In the first phase, just program. Don't think about how you're software should look, avoid communicating with any fellow team-members, barely look at any existing requirements and most importantly, do not write test-cases for the resulting software. The second phase consists mainly of argument. If somebody is not happy with your software, just argue that it works until they give up. Argue at a personal level ("Who are you to mess with my beliefs in my intelligence?") and never waiver. Remember, as you've got no tests and don't care about the requirements, your software is correct by definition. You really don't have to win the argument, which you quite certainly won't, you just have to make sure that any doubters in your software know that it is just not worth it to sacrifice any of their valuable work time by trying to reason with you. Once you've mastered phase 2 to a certain degree, you will even be able to convince others that you, and only you are right, thus establishing a good foundation for your next project.

Effectiveness: ★★☆☆☆
Efficiency: ★★★★☆

The Strictly Formal Model

We all learned how to do nice proofs and simple coding just lets your valuable mathematical skills perish after some time. Instead, use the strictly formal model which doesn't need documentation and makes testing totally useless. In this model we only use half of the phases known to the waterfall model. We concentrate on requirements (have to be formally proven) and the design (needs even more formal proofs). All these proofs should take long enough for the project to be cancelled before anybody really has the insolence to ask for any code. However, if the project continues after these two stages, then start coding with following rules:

1. Every line of code needs a formal proof.
2. Every function and/or class needs a formal proof.
3. The whole system must be continuously proven.
4. If you really run out of proofs to make, just start proving the correctness of the logic of the CPU of your machine.

When you're finished, which will take approximately 20 years for a simple calculator, you can finally tell people that you have made provably correct software. (Until somebody checks the underlying proofs and finds a few mistakes.)

Effectiveness: ★☆☆☆☆
Efficiency: ★☆☆☆☆ ⌥

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Zukunftsforscherin?

Wenn sich deine Gedanken nicht nur mit dem Heute beschäftigen, sondern auch in die Zukunft wandern können, dann laden wir dich ein an unseren Innovationsprozessen für die Welt der Zukunft teilzunehmen. Der Tätigkeitsbereich der SCS ist die Computertechnologie. Hier sind wir stark und verändern dank innovativem Querdenken festgefahrene Strukturen, loten das Spektrum der Möglichkeiten aus und mischen Innovation und Technologie zu neuen marktfähigen Produkten.

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Programming contests – Programming for Fun and Fame

SANDRO FEUZ UND SEBASTIAN MILLIUS

In einem Programmierwettbewerb werden Aufgaben gestellt, die mittels eines Computerprogrammes zu lösen sind. Dabei liegt der Fokus auf algorithmischem Programmieren, das heisst es müssen keine grafischen Oberflächen o.ä. implementiert werden, sondern nur Programme, welche die korrekte Ausgabe zu den verfügbaren Eingaben generieren.
Programmierwettbewerbe bieten denjenigen eine Plattform, denen das universitäre Angebot nicht den Lernhunger zu stillen vermag oder die bereit sind, unbekannte Gebiete zu erforschen und neue herausfordernde Konzepte zu lernen. Wie immer steht dabei hauptsächlich der Spass im Vordergrund.

ACM ICPC

Für Studenten der wichtigste Wettbewerb ist der ACM ICPC, der International Collegiate Programming Contest der Association for Computing Machinery. Es ist ein internationaler Team-Wettbewerb, an dem Studierende von Universitäten der ganzen Welt teilnehmen um sich zu messen. Ein Team besteht jeweils aus drei Leuten, die zusammen nur einen Computer zur Verfügung haben und in 5h möglichst viele Aufgaben lösen müssen. Erlaubt sind dabei die Programmiersprachen C, C++ und Java.

Geschichte

Die 1947 gegründete ACM ist die älteste und grösste Informatikervereinigung der Welt. Die Organisation mit Hauptsitz in New York vergibt unter anderem den Turing Award (das Äquivalent zur Fields-Medaille der Mathematiker oder dem Nobelpreis der Wissenschaftler) und fördert die Fähigkeiten von Studenten der Informatik. Aus diesem Grundgedanken heraus entstand auch der ICPC.

ACM ICPC World Finals

Das Finale des ACM ICPC bringt die besten Programmierteams aus der ganzen Welt zusammen und während einer Woche wird nicht nur programmiert, sondern den Teilnehmern auch ein reichhaltiges Nebenprogramm geboten. Die World Finals sind sehr prestigeträchtig und so wird beispielsweise jedes Jahr das Gewinnerteam zu der Vergabe des erwähnten Turing Awards eingeladen. Der Weg an die World Finals ist jedoch nicht ganz einfach und so hat sich erst letztes Jahr zum ersten Mal ein Team der ETH dafür qualifizert[1]. Das Team bestehend aus Vladimir Serbinenko (Mathematik), Rajko Nenadov (Informatik) und Stephan Kollmann (Informatik) zusammen mit den Teamleadern Sebastian Millius (Informatik) und Fedor Tsarev (Informatik, St. Petersburg State University of IT, Mechanics and

Optics) war vom 27. Mai für eine Woche nach Orlando, Florida in den USA eingeladen um Südwest-Europa zu vertreten.

Die erfolgreichen Teammitglieder haben mit ihrer Qualifikation bewiesen, dass sie zu den besten Studenten gehören. Hierfür haben sie im Vorfeld mit viel Fleiss und Aufwand trainiert. So konnte sich die ETH bei ihrer allerersten Teilnahme an einem Weltfinale im Mittelfeld platzieren.

Neben vielen fachlichen Erfahrungen und Begegnungen kam natürlich auch der Spass nicht zu kurz. Orlando und Florida haben viel zu bieten und es gibt auch viel zu entdecken. So können die Teilnehmenden auf eine spannende und lustige Zeit vor und nach der offiziellen Woche zurückblicken.

Regional- und Local-Contest

Die Teilnehmer für die World Finals werden in einem zweistufigen Auswahlprozess bestimmt. Der erste Schritt ist dabei der ETH Local Contest am 15. Oktober 2011, an dem alle ETH-Studenten, welche die Teilnahmebedingungen erfüllen (studieren seit 2007 oder später. geboren '88 oder später, Genaueres auf [1]) teilnehmen können. Es ist ein Einzel-Wettbewerb (noch keine Teams) und besteht aus 5 bis 10 Problemen, die in 5 Stunden gelöst werden müssen. Die besten 6 Teilnehmer werden als zwei Teams die ETH an dem sogenannten Regional Contest am 19./20. November 2011 in Madrid vertreten. Selbstverständlich werden alle Kosten für Unterkunft und Reise von der ETH übernommen. Die ETH ist Teil der Südwest-Europa Region (SWERC) und so werden in Madrid Teams aus Spanien, Portugal, Frankreich, Italien, Österreich und der Schweiz antreten. Die zwei bestplatzierten Teams des SWERC qualifizieren sich schlussendlich für die World-Finals. ➔

ETH ACM ICPC Local Contest 2010

Wie kann ich mitmachen?

Für den ACM ICPC sind Analyse-, Algorithmik- und Implementions-Skills gefragt. Desweiteren ist Teamfähigkeit enorm wichtig, denn jedem Team steht nur ein Computer zur Verfügung.

ETH-Team an den World Finals.
V.l.n.r.: Fedor Tsarev, Rajko Nenadov, Stephan Kollmann, Vladimir Serbinenko.
Fehlt: Sebastian Millius.

Der VIS-ACM führt im kommenden Herbstsemester wieder verschiedene Trainingscontests durch. Der erste davon findet bereits am Samstag, den 1. Oktober 2011 statt. Diese Trainingscontests sind insbesondere auch als Einführung gedacht und stehen allen offen, die interessiert sind.

Um die beiden ETH Teams danach optimal auf den Regional Contest vorzubereiten, organisieren wir zusammen mit dem Departement Informatik eine Trainingswoche mit ehemaligen ACM World Champions aus Russland. Ebenso kann dieses Herbstsemester wieder das ACM Lab belegt werden, das sich dem Einüben effizienter Programmiermethoden und Algorithmen anhand von Programmieraufgaben aus den vergangenen ACM Wettbewerben widmet.

Alle Informationen rund um das Training und den Wettbewerb an der ETH sind verfügbar unter [2], und Interessierte sollten sich am besten auch auf die ACM-Mailingliste[3] einschreiben oder bei Fragen direkt an [4] schreiben.

Abschliessend ist noch zu sagen, dass wirklich alle Studenten, welche die Bedingungen erfüllen, angesprochen sind. Schon mehrmals haben sich Studenten aus dem ersten Semester ("Erstis") oder aus anderen Studiengängen für den Regional Contest qualifiziert. Desweiteren ist der Local Contest auch an sich eine sehr spannende Erfahrung und nicht zuletzt wegen dem Apero mit der grössten Bierauswahl zu besuchen. ⌥

Links

[1] Gleichzeitig war es auch das erste Team einer Schweizer Universität

[2] http://acm.vis.ethz.ch/

[3] acm-interessenten@lists.vis.ethz.ch

[4] acm@vis.ethz.ch

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Lecture Review

Game Programming Lab

THORBEN BOCHENEK MADE HIS DREAM COME TRUE!

Creating his very own computer game is probably an early dream of every computer scientist. I myself have tried so many - let's say three - times to create something playable, but always ended up with something that had horrible graphics and not even a tiny bit of fun gameplay. By attending the course "Game Programming Lab" my dream finally came true - and I even got credit points for that!

With 10 CP the course actually gives you a lot of them. But even this amount is probably not enough for all the work, dedication and even love the students put into designing their very own games. That is right: We worked MORE THAN WE HAD TO, because it was so much fun.

So, what is the course about?

The goal of the course is to produce a working and fun computer game for the XBOX360. To accomplish this goal it teaches the basics of programming for the XBOX, but more importantly how to design and test a game. How to come up with an idea? When is something fun? How to tweak the game and how to test a game idea? These are some of the questions that will be answered - somehow.

To help the students, real game designers from Disney's gamestudio Blackrock in Brighton (UK) even showed up a few times to give real world advice.

How does the course work?

In the first lecture the students will form teams of three or four. The first milestone is then to come up with a game idea, present it in class and defend it against the critical fellow students. Once everybody is happy with the idea you build a physical prototype to test if your game could be fun.

Then, after three or four weeks, the crazy hacking begins. Every Team gets enough XBOXs, controllers and harddisks to start and locks itself up for a few weeks in the CAB computer labs to work on the game – yes, this people playing on the XBOX that you meet at 2 o'clock in the morning were actually GPL students.

Of course from time to time there will be alpha, beta, gamma and so on presentations and more critical questions from the fellow students.

Finally, in the last week the event takes place that you hopefully all know about: The final GPL presentation. Every group prepares a breathtaking, totally cool and absolutely stylish presentation and shows off their proud work in front of a crowd of hundreds – I am not kidding here – of curious visitors. After that everybody gets a chance to play the final products.

Trust me, it is really, really great if you finally see people having fun playing your game. A dream comes true! ⌥

IAETH Stammtisch

MELANIE RAEMY

[i][A][E][T][H]
Informatik-Alumni ETH Zürich

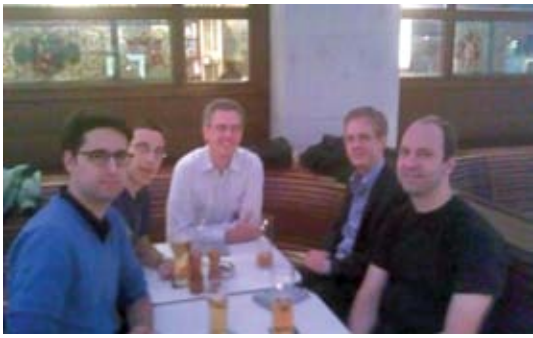
Mitglieder vom IAETH (Informatik Alumni ETH) Verein treffen sich fast jeden Monat zum Stammtisch. Einige kommen direkt von der Arbeit und essen ein Burger oder Clubsandwich; andere trinken einfach ein Feierabendbier. Dies ist eine gute Gelegenheit, um alte Freunde zu treffen und neue Kontakte aufzubauen.

Mit dem neuen Reglement können sich jetzt auch schon Bachelor-Absolventen beim IAETH anmelden und so schon vor Studienabschluss Kontakte zur Berufswelt knüpfen und vielleicht auch Inspirationen zur Berufswahl erhalten.

Anmelden kann man sich auf unserer Webseite www.iaeth.ch

Wir freuen uns, auch Dich bald an unserem Stammtisch zu sehen.

Für den Vorstand
Melanie Raemy

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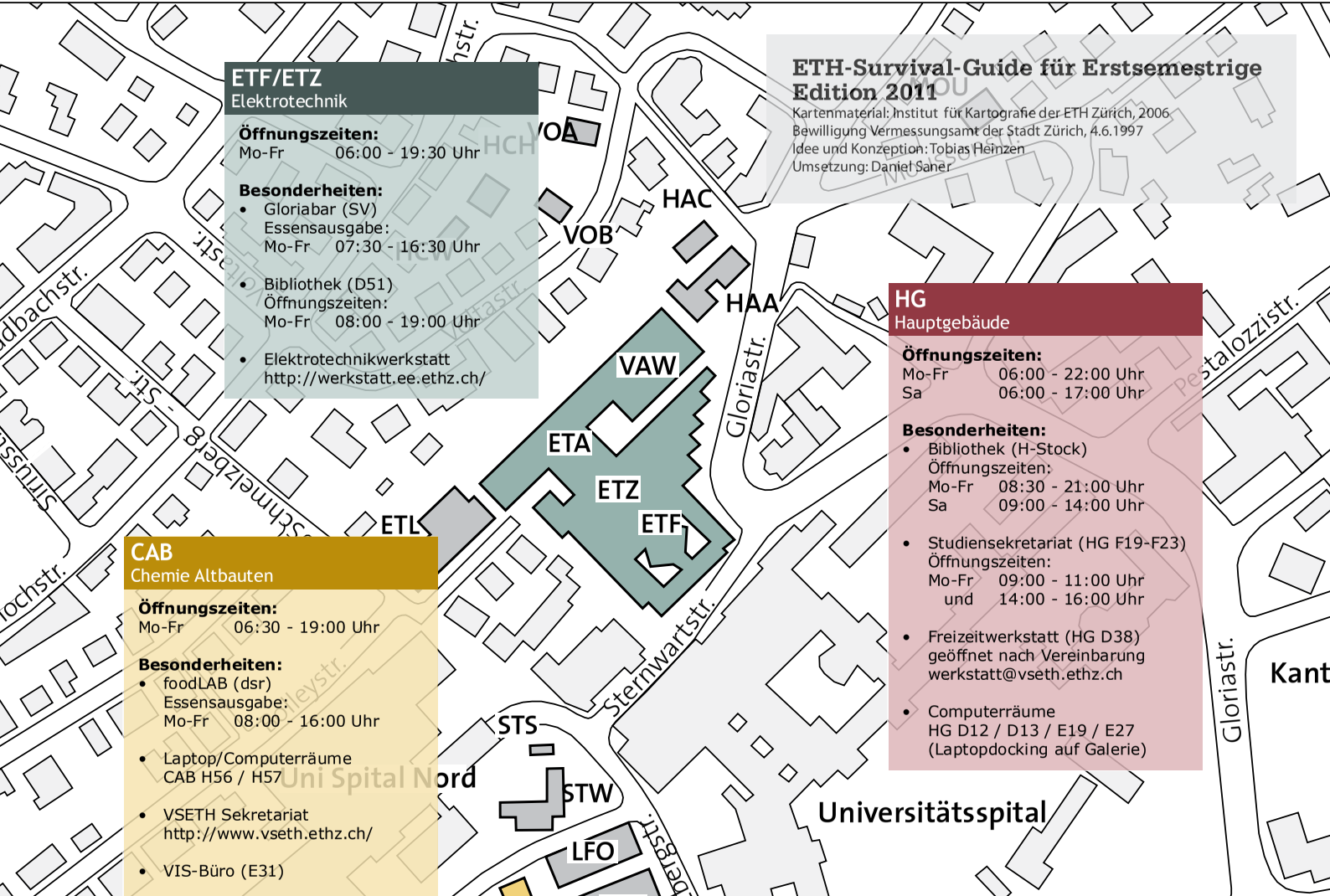
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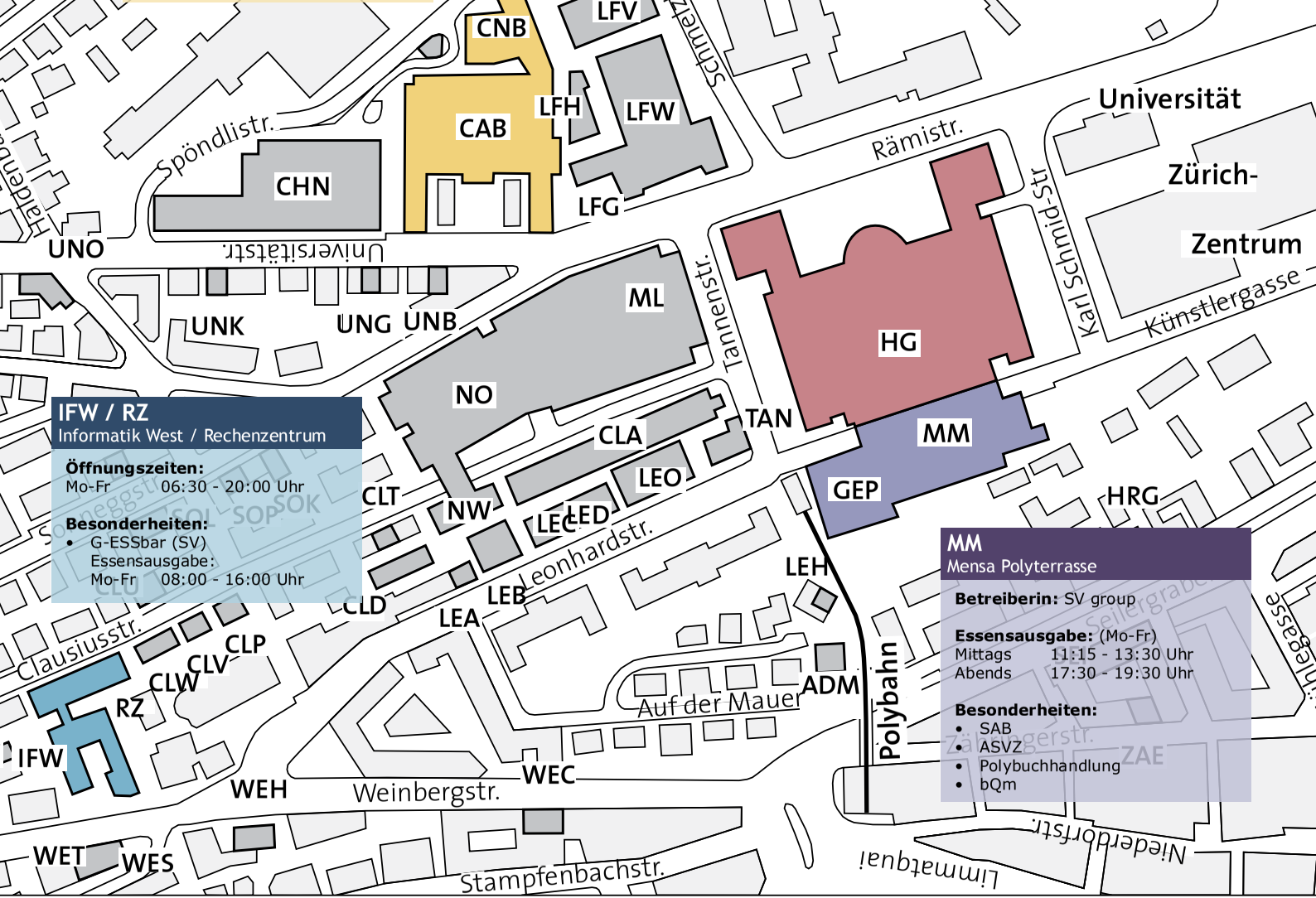
Mo-Fr 08:30 - 21:00 Uhr
Sa 09:00 - 14:00 Uhr
• Studiensekretariat (HG F19-F23)
Öffnungszeiten:
Mo-Fr 09:00 - 11:00 Uhr
und 14:00 - 16:00 Uhr
• Freizeitwerkstatt (HG D38)
geöffnet nach Vereinbarung
werkstatt@vseth.ethz.ch
• Computerräume
HG D12 / D13 / E19 / E27
(Laptopdocking auf Galerie)
CAB
Chemie Altbauten
Öffnungszeiten:
Mo-Fr 06:30 - 19:00 Uhr
Besonderheiten:
• foodLAB (dsr)
Essensausgabe:
Mo-Fr 08:00 - 16:00 Uhr
• Laptop/Computerräume
CAB H56 / H57
• VSETH Sekretariat
http://www.vseth.ethz.ch/
• VIS-Büro (E31)
HCH
HCW
VOA
VOB
HAC
HAA
VAW
ETA
ETZ
ETF
ETL
STS
STW
LFO
Gloriastr.
Sternwartstr.
Universitätsspital
Uni Spital Nord
Kant



IFW / RZ
Informatik West / Rechenzentrum

Öffnungszeiten:
Mo-Fr 06:30 - 20:00 Uhr

Besonderheiten:
- G-ESSbar (SV)
  Essensausgabe:
  Mo-Fr 08:00 - 16:00 Uhr

MM
Mensa Polyterrasse

Betreiberin: SV group

Essensausgabe: (Mo-Fr)
Mittags 11:15 - 13:30 Uhr
Abends 17:30 - 19:30 Uhr

Besonderheiten:
- SAB
- ASVZ
- Polybuchhandlung
- bQm

Interview

Prof. Padua

JASCHA GRÜBEL

Jascha: Good afternoon, Mr. Padua. First of all I'd like to thank you for granting me the opportunity to interview you.

You are here at the ETH, Department of Computer Science Colloquium to present your research to interested students and professors. Before we get into detail I would like you to present yourself to our readership, like what have been your achievements so far and how did you end up in your field of research?

Padua: I am a Professor at the University of Illinois and I have been there for the last 25 years. As a student I also went to the University of Illinois and received my PhD in 1980 and then I returned to become a member of the faculty.

Let me tell you how I got into the field. I started in Computer Science in undergraduate. I went to college in Venezuela in South America and I went to the School of Science, I studied Mathematics first, in the Department of Mathematics. And a couple of years later, they offered me the Computer Science chair at the same school. I was thirty years old, that was in 1968. So it was a long time ago. The problem of the University in Venezuela with Computer Science degrees was the same as anywhere. The professors of the university came from Argentina. They have only been trying to do Computer Science. So when I finished my degree I went abroad for the PhD and I joined the University of Illinois because I was interested in computer systems. Though it wasn't very clear to me what computer systems were, but I knew that in Illinois they had a long tradition. In Illinois I met Prof. David Cook who had been the person in charge of the Illiac 4 super computers. That's how I got to the area of parallel computers.

Jascha: Thank you for the insights. So, in your opinion, what is the most important aspect of your research?

Padua: My area of research in general is compilers. Right now my area of interest is to study language primitives, to facilitate writing parallel programs. And this is tremendously important because all problems from now on must be processed in parallel. And the cost of developing parallel programs is much higher than the cost of developing serial programs. And one of the greatest challenges Computer Science faces is the development of a technology that will lower the cost of writing these parallel programs that must be done now.

Jascha: As a student if one is interested in your field of research, what are the necessities? How to get started working in this research area?

Padua: A stronger ground in a certain area of Computer Science is necessary. First it's important for the students to understand applications - knowing algorithms to solve scientific problems, knowing about algorithms to solve symbolic computations, like graphic problems for example. Then it is also crucial to understand the parallel machines which are used to execute the programs. And then of course knowledge of compiling technology, so it is possible to understand or to translate a programming language to the machine. That is why it is important to know what a good program should look like and what is a good programming style so that it would be possible to develop these primitives that would facilitate the programming.

Jascha: In your personal opinion, what have been the major developments in the last decade in Computer Science and how does it differ from the time before? And hence what will be the major challenges to come for Computer Science?

Padua: Well, definitely, the most important development has been the invention of the multi-core processors and in the long term all companies will have to support multi-core processors in programs as well as in architecture. So as I was saying before, that means that from now on the norm must be parallel programming, as far as it is possible. If it does not become the norm, there would be no reason for people to buy newer machines. Because the only advantage of a newer machine towards an older one will be the amount of processors. So if the applications are not parallel we would not see any benefit. That's the reason why in the future all problems must be solved in parallel.

And the fact that multi-core processors became the standards in computing leads me to believe that parallel programming is not only the most important event in the last decade, but probably the most important event in Computer Science in the last 50 years. It is probable to reshape Computer Science in every aspect since its beginning.

Jascha: So let's change the topic and talk about students. What's your perception of the latest generation studying Computer Science, like - what impressions do the students give you?

Padua: I have been teaching for many years, since 1980. So how many years? Around 30 years I think, but I say the students look very much the same. They look older (laughs) and from the point of view of the students I don't see any major difference. In the way Computer Science is allocated, perhaps there are differences. The students now have a better understanding of the discipline, because the discipline understands itself better. At the same time, there has been a move, there is just more and more programming made by the machine, so the focus is more on the level of abstractions and less on the machine. In that sense what we find nowadays is that the

➔

students are less concerned with the performance compared to the times before. Now for the new machines the norm is that you have to be less concerned with performance so that causes many of our students have to difficulties with increasing performance on an effective but inefficient program.

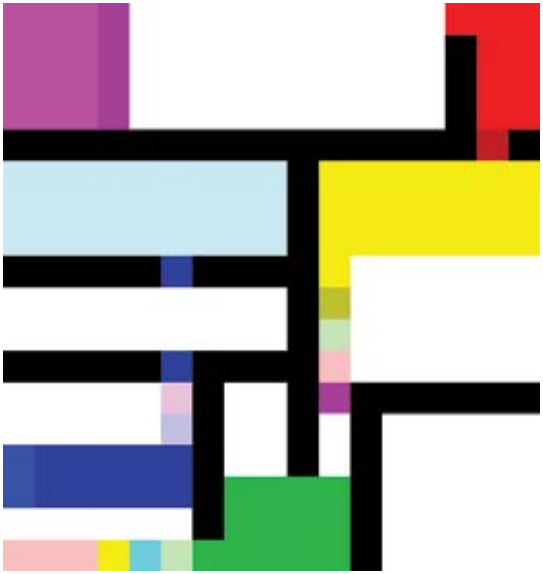
Jascha: Then here comes the last question: What tips can you give to students when it comes to decide for a specific field of research. What should they consider when they go for a more specific research field in Computer Science?

Padua: I think there are two factors. First and foremost, do what you really like. Because without a problem you are going to live for a long time [*sic*]. So you need to like what you're working with. Second, of course, very important perhaps is the viability of a research area and the future of the topic of a research area. There were topics in Computer Science that become less important and disappeared as research topics.

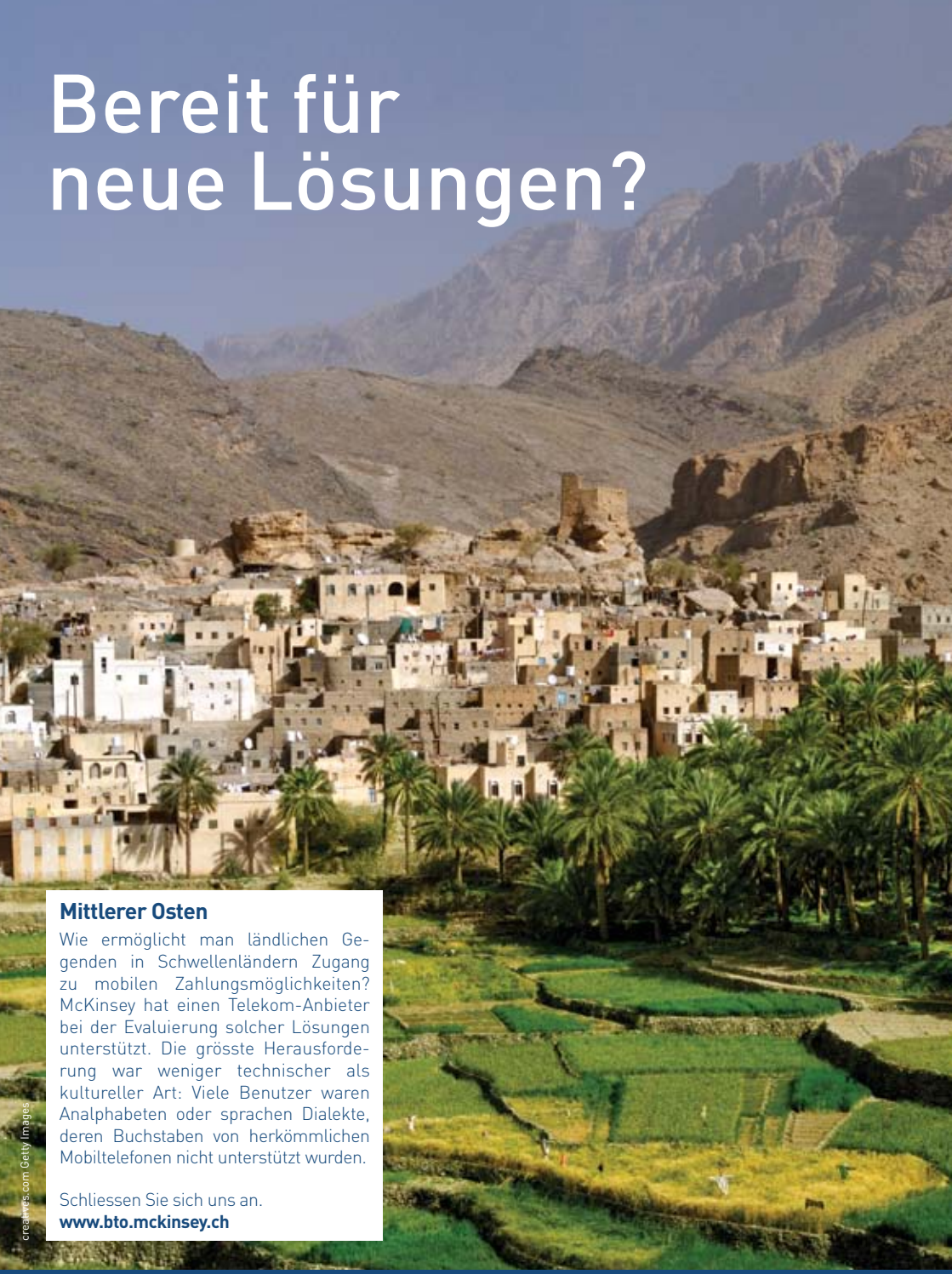
Jascha: Okay. In the name of VISIONEN and its readership I would like to thank you for the interview. ⌥

Errata

In edition 03/2011, the article on the esoteric programming language Piet included a misplaced picture. The printed picture in fact printed the text "Piet", and not "VIS" as promised. The printed picture was in fact created by Thomas Schoch and is available under CC-BY-SA-3.0. We apologize for the mistake, and you can find the correct image below. ⌥



Bereit für neue Lösungen?



Mittlerer Osten

Wie ermöglicht man ländlichen Gegenden in Schwellenländern Zugang zu mobilen Zahlungsmöglichkeiten? McKinsey hat einen Telekom-Anbieter bei der Evaluierung solcher Lösungen unterstützt. Die grösste Herausforderung war weniger technischer als kultureller Art: Viele Benutzer waren Analphabeten oder sprachen Dialekte, deren Buchstaben von herkömmlichen Mobiltelefonen nicht unterstützt wurden.

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Lessons from a Century

IBM Centennial Lecture on October 12, 2011 by Virginia M. Rometty, IBM Senior Vice President.

Virginia M. Rometty,
Senior Vice President IBM

As you read this, IBM just started its 101st year.

Over the past century technology, business and information systems have undergone radical change. During this time, IBM has reinvented itself several times, in many cases pioneering many of the innovations that have ultimately helped the world work better, whether it's tabulating systems to support social security programmes; computing systems that helped put a man on the moon; analytics to help power grids or healthcare systems function more efficiently; or, as recently as this year, a new supercomputer that can beat humans at complex question-and-answer tests.

Throughout the Centennial year of 2011, IBM is hosting a series of lectures given by senior leaders of the company and exploring the impact IBM has had on the way the world works over the past 100 years—and how that will shape the future.

On October 12, 2011, Virginia M. Rometty, Senior Vice President of the IBM Corporation will give a Centennial Lecture in the Audimax of ETH Zurich. In her talk, entitled "Lessons from a Century," Rometty will outline key lessons learned over a century of industry leadership. In particular, she will highlight the importance of driving high value growth and staying ahead of industry commoditization; implications of this for corporate culture and leadership; and the value of serving a purpose beyond the immediate corporate bottom-line.

In her role at IBM, Rometty reports directly to the CEO and is accountable for revenue, profit and client satisfaction in the 170 global markets in which the company is active. She also is responsible for leading IBM's global strategy, marketing and communications functions.

Rometty holds a degree in computer science and electrical engineering from Northwestern University in Chicago. Fortune magazine has listed her among the "50 Most Powerful Women in Business" for six consecutive years. ⌥

Event Details:

- IBM Centennial Lecture "Lessons from a Century"
- by Virgina M. Rometty, Senior Vice President, IBM Corporation
- Wednesday, October 12, 2011
  5 p.m. – 6 p.m., followed by refreshments
- ETH Zurich, Auditorium Maximum, HG F 30, Main Building, Rämistrasse 101
- RSVP to swissif@ch.ibm.com until October 6, 2011

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Auszug aus den Bedingungen: Nonstop-Flug in der Economy Class (Buchungsklasse P). Das Angebot ist gültig vom 2.8. bis 31.10.2011 und gilt nur solange Vorrat. Ab Basel, Genf und Zürich sind unterschiedliche Destinationen verfügbar. Buchungsperiode bis 31.12.2011. Rückflug bis 31.8.2012. Keine Rückerstattung und kein Umtausch. Nur ein Gutschein pro Kunde. Ausschliesslich für Academica-Neukunden, die Studierende in einem anerkannten Institut gemäss publizierter Schulliste sind. Vollständige Bedingungen unter www.credit-suisse.com/flug

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PapperlaPub

FREE BEER, TOPLESS PROSTITUTES AND FALSE ADVERTISING SINCE 2010

Marc Bruggmann und Remo Gisi berichten von vor und hinter dem Tresen

Vor mittlerweile gut einem Jahr entstand die Idee des PapperlaPub. Das ist, wie der erfahrene Student weiss, die Bar im ABBsolut. Diejenige Bar, die sich mit Elan einer internationalen Bierkultur widmet, ohne die studentischen Preisanforderungen aus den Augen zu lassen. Mit dem gemütlichen Ambiente am frühen Abend trumpft diese Bar genau so auf wie mit den rauschenden Parties, die zu späteren Stunden unangekündigt entstehen. Der Barchef schmeisst eine Runde farbenfroher Shots oder das lokale DJ-Talent übernimmt spontan das Set – in dieser Bar wirds nie langweilig.

Im Herbst 2010 als gemeinsames Projekt von AMIV und VIS entstanden, ist das PapperlaPub inzwischen ein etablierter Teil der CAB-Unterhaltungsindustrie. Im Wochenrythmus sorgen die Organisatoren dafür, dass die Vorlesungen am Donnerstag Morgen leer bleiben und die Schlafplätze im Aufenthaltsraum mehrfach belegt sind[1]. Auch die Yoga-Chicks des ASVZ wundern sich regelmässig über den Betrieb in der Männerdusche[2][3].

Nachdem also AMIV und VIS ein volles Jahr ihren Spass hatten wird es Zeit, weitere Studenten daran teilhaben zu lassen. Aus diesem Grund ist das PapperlaPub-Team seit diesem Sommer eine Kommission des VSETH. Wer sich schon immer mal die eigene Strandbar gewünscht hat ist also willkommen – wenn man vom Sand, den Bikini-Nymphen[3] und dem sonnigen Wetter absieht, ist beim PapperlaPub alles möglich.

Genau wie der Verbandsvorstand wird auch das PapperlaPub dieses Jahr krampfhaft versuchen, das letztjährige Niveau zu halten oder – mit Glück – gar zu steigern. Die Zeichen dafür stehen gut: Bereits beim "Grand Opening" in der ersten Semesterwoche wird das Barteam mit einem Knall ins neue Studienjahr starten[4].

Weitere Details findet der geneigte Säufer unter www.papperlapub.ethz.ch und bei gängigen sozialen Medien. ⌥

[1] Schlafen im Aufenthaltsraum der Fachvereine ist nach wie vor streng verboten.

[2] Keine sexuelle Anspielung beabsichtigt.

[3] Yoga-Training des ASVZ Donnerstags um 10:00, 11:00, 13:15, 14:45 und 16:00 im CAB

[4] Mittwoch, 21.09.2011, 18:00 Uhr, CAB. Details vertraulich.

PapperlaPub

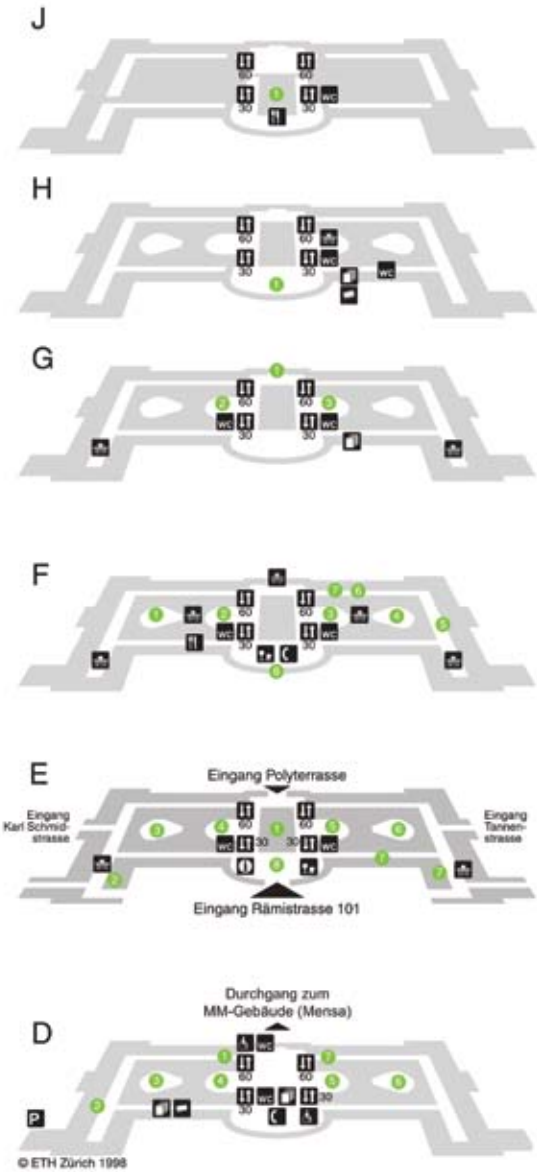
Die Bar im ABBsolut

Mittwoch
18:00 - 23:00

CAB D21, ETH Zentrum
http://papperlapub.ethz.ch
http://facebook.com/papperlapub.bar

Visionen Classics

Die Wirren des HG



J-Stock:

1. Dozentenfoyer (nur Lift 30)

H-Stock:

1. ETH-Bibliothek

G-Stock:

1. Aula (G60)
2. Hörsaal G5
3. Hörsaal G3

F-Stock:

1. Hörsaal F7
2. Hörsaal F5
3. Hörsaal F3
4. Hörsaal F1
5. Stipendiendienst (F12)
6. Rektorat (Kanzlei)
7. Büro der Rektorin
8. Auditorium Maximum (F30)

E-Stock:

1. Haupthalle
2. Freizeitwerkstatt
3. Hörsaal E7
4. Hörsaal E5
5. Hörsaal E3
6. Hörsäle E1.1 E1.2
7. Computerräume
8. Meetingpoint

D-Stock

1. Mobilitätsstelle (D60.1)
2. Reprozentrale (D48.3)
3. Hörsäle D7.1 bis D7.3
4. Hörsäle D5.1 bis D5.3
5. Hörsäle D3.1 bis D3.3
6. Hörsäle D1.1 und D1.2
7. Hausdienst/Fundbüro (D61)

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Capitalistic Console Cracking

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The eighth generation of video game consoles (both stationary and portable) is fast approaching, and as control schemes diverge, and franchises swap bases (really, FF XIII?), let's take a look at the past machines and the machinations of one of their manufacturers.

Twilight Bug

In a classical buffer overflow and stack smashing exploit, early versions of the Wii firmware were viable to a game implementation dependent memory attack: Manipulating a saved game of The Legend of Zelda: Twilight Princess to include a custom name for the protagonist's horse (canonically named Epona) allowed the execution of arbitrary code. The originally included snippet would automatically attempt to run "boot.dol" or "boot.elf" from the root of the SD card slot. This made it possible to install custom channels and bootloaders, opening the doors for Homebrew fans everywhere.

In truly good news for programming methodology, the original implementation of the exploit was written in such a portable and reusable manner, that its adaptations and forks continue to thwart Nintendo's counter-hacking efforts.

Be careful when googling for further information: The "Twilight Bug" is apparently also a vicious creature whose bite may turn you into an avid fan of Stephanie Meyer's "literary works" [sic].

Trucha bug

In another exploit that might delight the avid C programmer, the so-called "Trucha bug" happened during the authentication stage of executables. As for many console generations before, a system would only execute programs that were correctly signed by the manufacturer – in SNES days, this meant a physical chip on the cartridge; on the Wii, any game disk and digital download has been signed using the SHA-1 algorithm and an official Nintendo certificate. Unfortunately, the implementation of the SHA hash comparison has a serious flaw. See if you catch it in the pseudo C code below (also available at [1]):

```
int verify_cert (struct rsa_cert cert)
{
  char *cert_hash=SHA1(cert.metadata +
                       cert.content_hash);
  char *sig_hash=rsa_decrypt(
                 cert.rsa_signature,
                 cert.key_id);

  if (strncmp(cert_hash, sig_hash,
        SHA1_LENGTH) == 0)
  {
     return CERT_OK;
  } else {
     return CERT_BAD;
  }
}
```

The function used here to compare the two strings cert_hash and sig_hash is strncmp, "String-N-Compare". This function returns 0 if the two strings are either equal or if their first N characters are equal (here N is SHA1_LENGTH). The problem here is the internal representation of SHA hash strings – which in fact may contain the NULL byte '\0', signifying the end of C strings. Strncmp interprets this as the end of a string and thus will immediately return with the result so far.

This means that instead of having to brute-force a hash of SHA1_LENGTH, one can just randomly generate SHA hashes that have a NULL byte fairly early, and then brute-force for hash collisions, which immensely reduces the computational complexity involved to mere seconds.

Theories exist that this was just a plain programming mistake, as the function "memcmp" has nearly the same interface, and will in fact not abort on NULL bytes. However, from a strategic point of view, these errors might have been deliberate on the manufacturer's part to make their console easy to crack.

The Theory

But why should Nintendo purposely forego profit? The crux lies within the duality of income in the console industry: Firstly, the manufacturers directly profit from each sold hardware unit, controller, and physical extension. Secondly, they sell their SDKs and official certification to video game developers, who are thus indirectly responsible for part of the income. Out of the three big competitors Microsoft, Sony, and Nintendo, the latter is the only one who has – starting on release day – actually made money from each sold console unit; the first two instead banking on SDK and license sales.

This makes the supposed strategy much more reasonable: No matter if your operating system has been exploited, you will still sell hardware even to pirates who will not buy the licensed games. The only downside lies within the alienation of the video game developers, but Nintendo took that risk, successfully betting on the success of their innovative control method, which would motivate developers to continue to produce Wii games.

Conclusion

This is certainly only a theory; but keep this history in mind for the upcoming console generation. At this point it should also be said that both bugs mentioned above have been fixed in firmware upgrades; derivatives do, however, still exist, and the cracking community is always one step behind Nintendo, finding new exploits wherever they look. ⌥

Links

[1] http://wiibrew.org/wiki/Signing_bug

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ALEX MEUCHE — IF THE WORLD IS ENDING, I'M THROWING THE PARTY

Srdjan Capkun

«Capbear»

QUOTE:

«The ultimate goal of studying at ETH is to impress your grandma.»

HAPPENING:

makes a mistake on a slide, corrects it, the person who mentioned the mistake leaves the lecture hall «You make a mistake and then he leaves! You only get one strike! Come on!»

RATING:

★★★★★★★☆☆☆

Unrelated comment: Jealous of Frank? :P

⌥

Die Welt gemäss Beni Koller

Klassenkampf

MICHAEL GROSSNIKLAUS — EIN MONUMENT

Ganz alleine sitzt Beni Koller auf der Aussichtsplattform des Wasserturmes und beobachtet, wie die Sonne hinter den Bäumen des umliegenden Waldes versinkt. Das grelle Licht der letzten Sonnenstrahlen treibt ihm das Wasser in die Augen. Als eine Träne aus dem Augenwinkel über sein Gesicht läuft, erinnert ihn ein stechender Schmerz an die, mit fünf Stichen genähte, Platzwunde auf der Höhe seines Wangenknochens. An Krücken gehend und mit einem Fuss im Gips war der Aufstieg über die 153 Stufen des Turmes äusserst beschwerlich. Doch als Beni am späten Nachmittag aus dem Spital entlassen wurde, war er nur noch von einem Ziel besessen, dem er sogar seinen körperlichen Schmerz unterordnete. Er wollte weg aus der Stadt, weg von den Leuten, weg von sich selbst, weg von den Vorwürfen und der Verantwortung.

Am Abend zuvor hatte sich Benis Klassenzusammenkunft im Waldhotel am See zum Schlechteren gewendet, als er Anina mit Erich, seinem ärgsten Rivalen zu Schulzeit, im Bett überrascht hatte. Wie im Affekt war Beni panikartig geflohen und konnte den ersten Schock erst überwinden, als er sich auf dem Hotelparkplatz heftig übergeben musste. Ebenfalls an der frischen Luft hielt sich Toshiki Nakata auf, ein japanischer Austauschschüler, der im letzten Jahr vor der Matura in Benis Klasse zu Gast war. „Du bist ziemlich bleich!" bemerkte Beni und wollte wissen: „Verträgst du noch immer keinen Alkohol?" Toshiki wurde nun ein bisschen rot im Gesicht und nickte. „Du siehst aber auch aus als hättest du zu viel getrunken", sagte Toshiki leise und mit starkem Akzent, so dass Beni sehr genau hinhören musste, um zu verstehen, was Toshiki sagte. Gerade als er beginnen wollte zu erklären, was ihm wiederfahren war, realisierte er, dass es keinen Grund gab auf dem Parkplatz herumzulungern. „Lass uns eine Spritztour machen", schlug er deshalb vor. Toshiki war begeistert von dieser Idee und so bogen er und Beni kurz darauf vom Parkplatz auf die Überlandstrasse ein, die sich kurvenreich um den See wand.

Ehrlicherweise war Beni nicht ganz sicher, ob er fit genug war, ein Auto zu lenken. Er hatte jedoch einmal im Men's Health gelesen, dass das Unfallrisiko sinkt, wenn man einen Beifahrer bei sich hat und mit diesem ein Gespräch führt. Beni konnte sich auch noch gut an die Erklärung erinnern. Im Gegensatz zu Gesprächspartnern am Mobiltelefon, die die Fahrsicherheit verringern, passt ein Beifahrer den Rhythmus und die Intensität des Gespräches an die gegenwärtige Verkehrssituation an. Durch diese Gesprächsmodulation hilft der Beifahrer mit, Situationen zu erkennen, in denen Vorsicht und Ruhe angebracht ist. Da aber Toshiki seit ihrer Abfahrt keinen Ton mehr von sich gegeben hatte, begann Beni seinen eigenen Gedanken nachzuhängen. Er liess den Verlauf des Wochenendes bis zu diesem Zeitpunkt nochmals vor seinem geistigen Auge passieren. Je länger er dies tat, umso bewusster wurde ihm, dass er sich wie ein Arsch benommen hatte.

Gerade als Beni in einen Kreisverkehr einbiegen wollte, platzte Toshiki heraus: „Nein, du siehst aus, als hättest du deine Frau mit einem anderen Kerl im Bett erwischt!“ Völlig überrumpelt von diesem Schlag ins Leere, der zum Zufallstreffer mutierte, übersah Beni beinahe den Lastwagen, der im letzten Moment doch noch beschloss, im Kreisel zu bleiben. Nur dank einer Vollbremsung blieb Benis vordere Stossstange wenige Zentimeter vor dem Lastwagen stehen, der laut hupend an ihnen vorbei brauste. Beni kam zum Schluss, dass Toshiki entweder selbst nicht Autofahren konnte oder, dass das, was in „Men's Health“ steht, nicht für Japaner gilt. Unabhängig von der exakten Erklärung beschloss Beni umzukehren, da er eine nächtliche Seeumfahrung mit einem solchen Beifahrer für zu gefährlich hielt. Der Rest der Fahrt verlief bis auf eine Ausnahme ruhig. Kurz bevor sie das Hotel erreicht gehabt hätten, nahm Toshiki nochmals einen Anlauf: „Hat sie dich betrogen, weil du keinen flotten Dreier mit ihr und dem anderen Typ haben wolltest?“ Die Verwunderung über diese Frage und die Suche nach einer passenden Antwort lenkten Beni für einen kurzen Moment völlig ab. Er sah das Reh, das plötzlich im Licht seiner Scheinwerfer stand, nicht mehr rechtzeitig, um noch bremsen zu können. Der Versuch eines Ausweichmanövers endete im See, nachdem Benis Wagen zu schlingern und schliesslich sich zu überschlagen begann.

Die Sonne ist untergegangen und es ist kühl geworden auf dem Wasserturm ausserhalb der Stadt. Was aus Toshiki werden wird, weiss Beni noch nicht. Als er aus dem Spital entlassen wurde, lag Toshiki immer noch auf der Intensivstation im Koma. Erst im Verlauf der Nacht werde eine genauere Prognose möglich sein. Dass es allein seine Schuld ist, was auch immer passieren wird, das weiss Beni allerdings ganz genau. Langsam steht er auf und vergewissert sich, dass er immer noch alleine auf der Aussichtsplattform ist. Dann beginnt Beni, Schritt für Schritt in die Richtung des Geländers zu humpeln. ⌥

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Puzzled

BARBARA KELLER — LIKES MOVIES OR PUZZLES!
ROGER WATTENHOFER — IF I HAD TO WATCH THE SAME MOVIE OVER AND OVER AGAIN, IT BETTER BE GROUNDHOG DAY

Puzzles hardly ever make it into popular culture, indeed Bruce Willis and Samuel L. Jackson working on the water jug problem (in the third edition of the "Die Hard" action franchise) is a rare Hollywood example.

But now, out of a leaked script of the highly anticipated movie "Princess Bride 2", another puzzle has caught our attention.

The storyline in short: In a small kingdom called Doubletrouble a queen lives happily with her beautiful son, whom a lot of young brave women want to marry. To sort the wheat from the chaff the queen challenges the applicants with the following puzzle: they are given three large buckets of water, containing 85, 67 and 93 liters respectively. In honor to the name of the kingdom, the only allowed step is to double the content of one bucket by pouring the same amount of water from a fuller bucket. That is, they may for instance get from (85,67,93) to (18,134,93).

The woman who is able to completely empty one bucket with as few steps as possible gets invited to a dinner with the prince. In order to keep up the suspense the screenwriters resurrect the evil Vizzini character from the first movie who is able to alter the initial fillings of the buckets to any combination of three integers.

Our questions for you are: How many (and which) steps does one need to get on a date with the prince?

Can Vizzini choose a configuration such that nobody is able to solve the task, or is that inconceivable?

Please send your solutions to puzzled@vis.ethz.ch until Friday, October 28th. ⌥

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