Doctoral Program in Computer & Communication Sciences - EDIC

Prof. Matthias Grossglauser

EDIC Program Director
An introduction to the country ...

**Official Name**

**Switzerland**/Swiss Confederation

**Location**

Switzerland is situated in the heart of Europe and borders on France, Germany, Austria, Italy, and the Principality of Liechtenstein

**Total Area**

41,285 square kilometres. More than two thirds of the country’s territory are occupied by the Alps.

**Population (2016)**

8.42 million

Including approximately 25% resident foreigners. More than two-thirds of the population live in urban areas.

**Languages (2015)**

63% German (predominantly Swiss German), 23% French, 8% Italian, 0.5% Romansh, English is widely spoken.

**Major Cities (2015)**

- Zurich: 187,600
- Geneva: 164,300
- Basel: 158,800
- Bern: 148,600
- Lausanne: 133,900

**Expenditure on Education and R&D (2015)**

- 3% on R&D as percentage of GDP
- 5.6% on Education as a percentage of GDP

**Economy**

The main sectors include microtechnology, high-tech, biotechnology & pharmaceuticals, banking & insurance, tourism and international organizations. The service sector employs the largest number of people. The country has a flexible job market and the unemployment rate is low.

**Political System**

Switzerland is a federal, democratic state. Each of the 26 cantons has its own constitution, parliament, government, and judicial system.

**Students (2016)**

244,104 including approximately 25% international students.

A history of innovation ...

- For the 7th consecutive year, Switzerland ranked first in the 10th edition of the Global Innovation Index (GII).
- The Index measures the innovation capacity and performance of global economies by surveying 130.
- Switzerland scores the highest in “innovation outputs”, such as knowledge, technology and creativeness; filing the most patent applications per head to the European Patent Office in 2016, a strong indicator for innovativeness.
and exceptional competiveness ...

Switzerland again top of the class in the WEF Global Competitiveness Index – 9th year in a row

The country’s strong suit are its innovative power, strong education system and a flexible labor market

“Talent will become increasingly more important than capital and therefore the world is moving from the age of capitalism into the age of talentism. Countries preparing for the 4th Industrial Revolution and simultaneously strengthening their political, economic and social systems will be the winners in the competitive race of the future.”

Klaus Schwab, Founder & Executive Chairman, WEF
IC School Startups

- Anemomind
- Artmyn
- Aubep
- B-mob
- Beijing DAAV Technologies
- BugBuster
- CodeTickler
- Crossing-Tech
- Cyberhaven
- Dartfish
- Db4all
- Digital Optim
- DomoSafety
- EDSI-Tech
- Faceshift
- Geosatis
- Global ID
- Ikaneos
- Illusonic
- iNoCs
- Innoview
- Jillion – Jime
- JustCloudIt
- Kandou Bus
- Lantern
- Solutions
- Livestream
- MadeinLocal
- Minsh
- Nextthink
- nVisio
- OZWE
- PatternLab
- Pix4D
- Playfulvision
- PocketCampus
- Prediggo
- Pryv
- Quividi
- Raw Labs
- RAYFORM
- RouteRANK
- S1 Systems
- Scala Solutions
- Sensorscope
- Shoelace
- Wireless
- Simpliquity
- SonoView
- Acoustic
- TradeYourMind
- True eBooks
- Publishing
- Typesafe
- Usefulweb
- Vidinoti
- Visualbiotech
- Wizzy
- Education
- Technologies
- Zebravia

230 EPFL startups created since 2000

CHF 397 million raised in 2016
EPFL today

Campus
10,686 students, of whom 2,142 PhD students (2017)
343 faculty (2017)
5,996 staff (2017)

Spending
CHF 675M from State budget
CHF 267M other funding (EU, SNSF, private...)
Total: CHF 942M (2016)
Computer & Communication Sciences: Who we are?

- Internationally highly ranked
- 53 IC faculty members
- From peer schools (e.g., Berkeley, CMU, Cornell, MIT, Stanford, …)
- Internationally recognized (e.g., Turing Award, US National Academies, ACM/IEEE Fellows)
- Strong industrial liaison
- Information theory to datacenters
13 research areas, 46 IC labs, 26 affiliated...

Theory, foundations, fundamental limits...

Interfacing with humans and nature...

Building real systems, all layers...

Learning from data, extracting knowledge, protecting data...
Path to a PhD

4~6 years
Defense
Internships
Conferences
TAing
Publish
Research
Courses (depth & breadth)
During your PhD with EDIC

➢ You will have an advisor/co-advisor
  – Will be with you until you graduate
  – Courses, research, career planning
  – Official annual feedback (evaluations)

➢ You will have a mentor
  – An EDIC Committee contact person + a “buddy” (older PhD student) for the 1st year
  – An IC faculty member beyond (from outside area)
  – Someone to talk to in general
# Timeline – your first year with EDIC

<table>
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<th>PhD Orientation (2 weeks)</th>
<th>Fellowship Year</th>
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<tbody>
<tr>
<td><strong>September 1\textsuperscript{st}</strong></td>
<td>Fall Semester</td>
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<tr>
<td>French classes</td>
<td>First project</td>
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<tr>
<td>Administrative tasks</td>
<td>Depth course</td>
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<tr>
<td>Research seminars</td>
<td>Potential matching</td>
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<tr>
<td>Social events</td>
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<tr>
<td>Mid-September</td>
<td>Spring Semester</td>
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<tr>
<td>Matching process</td>
<td>Second project</td>
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<tr>
<td>Semester start</td>
<td>Candidacy exam</td>
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<tr>
<td></td>
<td>Definitive matching</td>
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</tbody>
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Why?

- Depth: We want our students to be experts in their area
- Breadth: We want our students to know a bit outside their research focus
We nominate our students & graduates for awards and scholarships

Annually a small percentage of outstanding PhD theses are honored a Distinction

2017 EDIC Laureates

- A. Ichim
- M. Mondelli
- G. Radanovic
A partial list where EDIC PhD students intern ...

35-40 internships on average per year

<table>
<thead>
<tr>
<th>Industry</th>
<th>Industry (cont.)</th>
<th>Universities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe</td>
<td>Neovision</td>
<td>Carnegie Mellon</td>
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<tr>
<td>Apple</td>
<td>Nokia</td>
<td>Cornell</td>
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<td>Disney Zurich</td>
<td>Oracle</td>
<td>Harvard</td>
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<tr>
<td>Facebook</td>
<td>Orbiwise</td>
<td>HKUST, Hong Kong</td>
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<tr>
<td>Google</td>
<td>Qualcomm</td>
<td>MIT</td>
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<tr>
<td>HP</td>
<td>SAP</td>
<td>North Carolina</td>
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<td>IBM</td>
<td>Synopsis</td>
<td>Stanford</td>
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<td>Intel</td>
<td>Swisscom</td>
<td>UC Berkeley</td>
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<tr>
<td>Microsoft</td>
<td>Technicolor</td>
<td>Queensland</td>
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<tr>
<td>Natunix</td>
<td>VMware</td>
<td>Surrey</td>
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<tr>
<td>NEC</td>
<td>Yandex</td>
<td>Washington</td>
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</table>
EDIC Graduates – From where to where?
450 Theses awarded [2006-2016]

Where do they go?
- Switzerland [45%]
- USA [21%]
- UK [4%]
- Germany [3%]
- France [3%]
- Other [24%]

Europe [40%]
- France 7%
- Romania 6%
- Serbia 5%
- Italy 4%
- Greece 3%

Asia [30%]
- Iran 9%
- India 6%
- China 6%
- Turkey 5%

Americas [4%]

Africa [1%]
EDIC – Where do our graduates go?

- Industry: 65%
- Academia: 30%
- No data: 5%

2006-2016
450 Theses awarded
EDIC Alumni Survey 2015

In the framework of an EPFL-IC audit, 270 doctoral alumni were invited to reply, and 86 questionnaires were completed, corresponding to a response rate of 32%.

- **Professional activity of respondents:**
  - 77% occupy a position directly related to their education
  - 91% are satisfied or very satisfied with their job
  - 73% of respondents consider that the PhD represents a significant advantage in their career
  - 67% consider that their education corresponds well to professional requirements

- **Evaluation of the doctoral program:**
  - 75% believe that in their scientific discipline, the laboratory in which they did their PhD one of the best in the world
  - 81% consider that they received satisfactory scientific guidance
In conclusion ...

- Rich intellectual environment with international focus
- Graduate students collaborate with world-renowned faculty
- Benefit from generous resources and a rich network of academic and industrial partners
- Value close interaction between students and faculty within a flat organization structure
- EDIC alumni pursue stellar international careers as academics, scientists, and entrepreneurs
See you in September!

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