A vibrant campus
Internationally highly ranked

44 Professors + 5 new hires in 2019-20: ML, Theory, Distributed Systems, Vision

From peer schools (e.g., Berkeley, CMU, Cornell, MIT, Stanford, …)

Internationally recognized (e.g. US Academies, #1 in ACM Fellows Europe/UK)

Strong industrial liaison

Information theory to datacenters
IC Faculty

25 researchers have an h-index >40

Nr. 2 in Computer Science & Informatics Panel (the ranking of ERC grants)

Nr. 1 in Systems & Communication Engineering Panel (the ranking of ERC grants)

QS World University Ranking 2020

Computer Science & Information Systems

<table>
<thead>
<tr>
<th>Rank</th>
<th>University Name</th>
<th>More</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MIT Massachusetts Institute of Technology (MIT)</td>
<td></td>
<td>United States</td>
</tr>
<tr>
<td>2</td>
<td>Stanford University</td>
<td></td>
<td>United States</td>
</tr>
<tr>
<td>3</td>
<td>Carnegie Mellon University</td>
<td></td>
<td>United States</td>
</tr>
<tr>
<td>4</td>
<td>University of California, Berkeley (UCB)</td>
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<tr>
<td>5</td>
<td>University of Oxford</td>
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<tr>
<td>6</td>
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<tr>
<td>7</td>
<td>Harvard University</td>
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<td>ETH Zurich - Swiss Federal Institute of Technology</td>
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<tr>
<td>10</td>
<td>University of Toronto</td>
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<td>Canada</td>
</tr>
</tbody>
</table>

Source: www.topuniversities.com
IC at a glance

theory, foundations, fundamental limits...

learning from data, extracting knowledge, transforming data ...

building real systems, all layers...

interfacing with humans ...
theory, foundations, fundamental limits...

Rachid Guerraoui

Passionate, persistent but cool.

I'm interested in the principles of distributed computing with a recent focus on epidemic algorithms, secure distributed machine learning protocols as well as scalable implementations of virtual currencies.

Learn more on gasc.epfl.ch/phd-edic
Application deadline: December 15, 2020

Distributed Computing
https://dcl.epfl.ch/

Lenka Zdeborova

Taming deep learning using physics.

We deploy advanced tools of theoretical physics to study high-dimensional computation problems appearing in statistical inference, learning with deep neural networks or combinatorial optimization.

Learn more on gasc.epfl.ch/phd-edic
Application deadline: December 15, 2020

Statistical Physics of Computation
http://artax.karlin.mff.cuni.cz/~zdebl9am/
theory, foundations, fundamental limits...

Mika Göös
Curious, passionate, stubborn.

I’m obsessed with proving impossibility results in theoretical computer science. Can we show a given computational problem simply admits no efficient algorithm?

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Theoretical Computer Science
https://theory.epfl.ch/mika/

Ola Svensson
Enthusiastic, persistent, happy.

My research interests are in theoretical computer science with a focus on developing new algorithmic techniques with the potential to overcome longstanding barriers for efficient computation.

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Theoretical Computer Science
https://theory.epfl.ch/osven/
learning from data, extracting knowledge, transforming data ...

Antoine Bosselut
Open-minded, energetic, collaborative.

I focus on developing language systems that model challenges related to commonsense reasoning over knowledge in text. How can we endow machines with human-like reasoning capabilities?

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Natural Language Processing
https://atcbosselut.github.io/

Nicolas Flammarion
Passionate, perceptive and supportive.

I’m working on developing new algorithmic and theoretical tools to make machine learning more robust and practical. My research interests are at the interface between optimization and statistics.

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Theory of Machine Learning
https://www.epfl.ch/labs/tml/
learning from data, extracting knowledge, transforming data ...

Tanja Käser

Enthusiastic, perfectionist, wants to have an impact on society.

My research interests are at the interface of machine learning and education. I’m working on developing novel models and algorithms which will help understand and improve human learning.

Digital Vocation Education and Training
https://www.epfl.ch/labs/d-vet/

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Bob West

Data is beautiful!

My research distills heaps of raw data into meaningful insights by developing and applying tools in social and information network analysis, applied machine learning, computational social science, and NLP.

Data Science
https://dlab.epfl.ch/

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020
Building systems, all layers ...

Mathias Payer
Capture-the-flag, GeoCaching, nerd.

I research defenses to prohibit exploitation of vulnerabilities and mechanisms to discover software bugs, enabling developers to fix them before they can do harm.

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Carmela Troncoso
Determined, patient, clown.

My lab works on understanding and mitigating the impact of technology on societal values.

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

HexHive
https://hexhive.epfl.ch/

Security and Privacy Engineering
https://www.epfl.ch/labs/spring/
Building real systems, all layers ...

Anastasia Ailamaki

Impact-driven with a positive attitude.

We design real-time intelligent systems for data-intensive applications. Our systems learn and adapt to changing workload requirements, while using heterogeneous compute and memory devices.

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Data-Intensive Applications and Systems
https://www.epfl.ch/labs/dias/

Giovanni De Micheli

Logic synthesis, superconducting electronics, emerging technologies.

I am looking for top researchers with a strong background in computer science and electronics. You will ride the wave of hot and timely topics with international collaborations.

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Integrated Systems
https://www.epfl.ch/labs/lsi/
Building real systems, all layers ...

Babak Falsafi

Inspires to excel, quality over quantity.

We are now in the Post-Moore Era where silicon density no longer doubles every two years. My research centers around holistic post-Moore datacenter design from algorithms to infrastructure with a focus on scalability and sustainability.

Learn more on go.epfl.ch/phd-edlc
Application deadline: December 15, 2020

Parallel Systems Architecture
https://parsa.epfl.ch/

Mirjana Stojilovic

Energetic, inquiring, supportive.

My research interests lie in field-programmable technology and electronic design automation, with increasing focus on the hardware security vulnerabilities of today’s heterogeneous and intelligent computing systems.

Learn more on go.epfl.ch/phd-edlc
Application deadline: December 15, 2020

Parallel Systems Architecture
https://people.epfl.ch/mirjana.stojilovic
Building real systems, all layers ...

Anne-Marie Kermarrec
Creative, visionary, and energetic.

My interests are in large-scale distributed systems with a focus on designing privacy-aware, efficient and sustainable machine learning systems.

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Sanidhya Kashyap
Avid, resolute, and thoughtful.

My research interests are broadly in the area of systems with a particular focus on designing scalable, concurrent, and robust systems software for evolving heterogeneous machines.

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Scalable Computing Systems
https://www.epfl.ch/labs/sacs/

https://sanidhya.github.io/
Interfacing with humans ...

Wenzel Jakob

Hands-on advising style, likes to build things that work and are used by others.

My vision is to create robust and efficient algorithms that simulate light in a differentiable manner to solve inverse problems in computer graphics and beyond.

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Realistic Graphics
http://rgl.epfl.ch/

Mark Pauly

Geometry, Computation, Making

My research combines geometric reasoning, physics-based simulation and efficient optimization to explore new computational design methodologies for digital fabrication.

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Geometric Computing
https://gcm.epfl.ch/
Interfacing with humans ...

Sabine Süsstrunk
Curiosity, challenge, aesthetics.

My research interests are in computational photography and computer vision. Aiming to improve everyone’s photographic experience, my lab develops models, algorithms and systems that help to understand, process, and measure images.

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Image and Visual Representation
https://www.epfl.ch/labs/ivrl/

Amir Zamir
Anti low-hanging fruit, perfectionist.

Our research is on computer vision, machine learning, and perception-for-robotics. Every day, we ask the questions: how do we enable machines to see the world, understand it, and act in it intelligently, robustly, and safely?

Learn more on go.epfl.ch/phd-edic
Application deadline: December 15, 2020

Visual Intelligence and Learning
http://vilab.epfl.ch/zamir/
Broad impact on computer science

17 Number of paper presented by EPFL at ICML 2018

13th position with the most papers among universities

14 Number of paper presented by EPFL at NeurIPS 2018

17th position with the most papers among universities

11th position with the most papers among universities
Swiss Data Science Center

- Academic/industry collaborations
- Partnerships with Bühler and Peugeot-Citroën
- RENKU, the SDSC analytics platform (Open Source)

datascience.ch
Academic/Industrial consortium

- Founded in 2011
- 22 faculty from across EPFL
- Targeting Post-Moore Datacenter Design

Example innovations

- First 64-bit ARM server CPU (Cavium)
- Liquid-cooled 3D server chips (IBM)
- Dual Training/Inference Accelerators (MSR)
- DSL-based Custom Query Engines

ecocloud.ch
Center for Intelligent Systems (CIS)

- Joint initiative of the schools ENAC, IC, SB and STI
- Built upon existing strengths
  - Intelligent systems
  - Foundational theory
  - Modelling
  - Machine learning
- Seeks to advance research and practice in the strategic field of intelligent systems

go.epfl.ch/cis
Why a PhD?

- PhD is about where the IT revolution is going, and how you can be at the center of it all
- You should consider a PhD if you want
  - Be an academic
  - Take leadership positions in industry R&D
  - Preparation for a startup

Who should do a PhD?

- Fascinated by IT and have an aptitude for science and engineering
- Passionate about understanding how and why things work, the underlying fundamentals
- Want the breadth and depth for a vision to have an impact and make a difference

Profile

- 4- or 5-year Bachelor or Master degree
- Rigorous background in computer science, communication systems, electrical engineering, mathematics, physics and/or related fields
- Highly motivated, exceptional students who are passionate about scientific research
In a nutshell
- 4-6 years duration in English
- Competitive salary (~$50k)
- Award winning faculty and students
- Strong industrial liaison

In numbers
- 240+ PhDs, among campus largest
- 90% international students
- 45-50 join per year
- ~5 PhD students per faculty

dr. EPFL

EDIC doctoral program
go.epfl.ch/phd-edic
EDIC doctoral program

- Similar to the US doctoral programs; doctoral students do not apply directly to a professor, but to a program.

- Admission is done by a committee of professors from different areas of computer sciences with the goal of recruiting the best candidates.

- The top students selected by the committee receive an IC school fellowship that covers their first year.

- Fellowship students during their first year, can take classes and conduct small research projects (“EDIC projects” / “rotations”) in different labs, with the goal of choosing an advisor that will formally hire them into their lab at the end of the first year.

- This system is particularly valuable if you are interested in multiple research areas and would like to experiment and gain further experience before committing to a concrete path.

- Multiple rotations are not a requirement, however (in case you are only interested in a single lab).
EDIC Admission Cycles
go.epfl.ch/phd-edic

- 1st admission cycle
  - deadline December 15
    - Main admission cycle
    - Synchronized with US/Canada
    - Visit the OpenHouse
    - Apply NOW!

- Smaller 2nd admission cycle
  - deadline April 15
    - Fewer applications, fewer admissions
    - Synchronized with Europe
    - Will not get a chance to visit the Open House
EDIC Application Timeline

go.epfl.ch/phd-edic

1st Admission Cycle
- Application deadline 1st cycle
- Admission decisions sent out
- EDIC Open House
- Acceptance deadline

2nd Admission Cycle
- Application deadline 2nd cycle
- Admission decisions sent out
- Acceptance deadline

- Over 700 applications over both rounds
- Enroll roughly 50-55 (of which 20% from EPFL MS)
- Accept the top ~45 ranked as fellowship (of which 15% from EPFL MS)
EDIC Application Process

go.epfl.ch/phd-edic

- See the EDIC webpage for specific requirements.
- Go through IC faculty webpages to identify the research areas and the professors that are of most interest to you. You will need to include this information in the application form …
- Write a **Statement of Purpose** (SoP). Document clearly your reasons for wishing to do a doctoral thesis with EDIC, whom you would like to work with and explain longer-term professional goals.
- Find 3 referees. Ideally, the letters should be from professors or people with whom you have collaborated, and who can comment on your ability to do research. Make sure that the letters are submitted by the application deadline.
EDIC Application: Writing your SoP ...

- First paragraph
  - Describe the general areas of research that interest you and why

- Second to fourth paragraph
  - Describe some research projects that you worked on. What was the problem you were trying to solve? Why was it important? What approaches did you try? What did you learn? It’s fine to say that you were unable to fully solve your problem

- Fifth and sixth paragraph
  - Tell us a little bit about yourself and your life experiences. Why do you feel you need a PhD? Why is EDIC the right place for you? Whom would you like to work with?
Your path to a PhD with EDIC

During your PhD with EDIC

- You have an advisor(s)
  - With you until defense
  - Courses, research, career planning
  - Annual feedback (evaluations)

- You have a mentor
  - Program committee contact person + a “buddy” (older PhD) for first year
  - Faculty member beyond (from outside area)
  - Someone to talk to in general
Your first year with EDIC ...

<table>
<thead>
<tr>
<th>PhD Orientation (2 weeks)</th>
<th>First Year (Fellowship &amp; Direct Hires)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>September</strong></td>
<td><strong>Fall Semester</strong></td>
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<tr>
<td>French classes</td>
<td>First project</td>
</tr>
<tr>
<td>Administrative tasks</td>
<td>Depth course</td>
</tr>
<tr>
<td>Research seminars</td>
<td>Potential matching *</td>
</tr>
<tr>
<td>Social events</td>
<td><strong>Spring Semester</strong></td>
</tr>
<tr>
<td>Matching process *</td>
<td>Second project</td>
</tr>
<tr>
<td><strong>Mid-September</strong></td>
<td>Candidacy exam</td>
</tr>
<tr>
<td>Semester start</td>
<td>**Definitive matching ***</td>
</tr>
</tbody>
</table>

* fellowship students

* fellowship students
EDIC PhD students intern ~40 internships 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>• Berkeley</td>
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<tr>
<td>• Amazon</td>
<td>• NVIDIA</td>
<td>• CMU</td>
</tr>
<tr>
<td>• Apple</td>
<td>• Nokia</td>
<td>• Cornell</td>
</tr>
<tr>
<td>• Bloomberg</td>
<td>• Nutanix</td>
<td>• ETHZ</td>
</tr>
<tr>
<td>• Bosch</td>
<td>• Oracle</td>
<td>• Haifa U.</td>
</tr>
<tr>
<td>• DeepMind</td>
<td>• OrbiWise</td>
<td>• Harvard</td>
</tr>
<tr>
<td>• Disney Research</td>
<td>• Qualcomm</td>
<td>• HKUST</td>
</tr>
<tr>
<td>• Facebook</td>
<td>• SAP</td>
<td>• INRIA</td>
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<td>• Google</td>
<td>• Synopsis</td>
<td>• MIT</td>
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<td>• HP</td>
<td>• Swisscom</td>
<td>• NUS</td>
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<td>• Huawei</td>
<td>• Technicolor</td>
<td>• NYU</td>
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<td>• IBM</td>
<td>• Twitter</td>
<td>• Queensland U.</td>
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<tr>
<td>• Intel</td>
<td>• Uber</td>
<td>• Stanford</td>
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<td>• Microsoft</td>
<td>• VMWare</td>
<td>• Toronto U.</td>
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<td>• Mozilla</td>
<td>• Walt Disney</td>
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<td>• Xilinx</td>
<td>• Vienna U.</td>
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<tr>
<td>• NEC</td>
<td>• Yandex</td>
<td>• Washington U.</td>
</tr>
</tbody>
</table>
EDIC Graduates: From where to where?
550 graduates 2006-2018

Where do our students come from

- Asia 32%
- EU 43%
- Switzerland 20%
- Americas 4%
- Africa 1%

Where our PhD alumni Go

- Switzerland 52%
- Asia 10%
- EU 17%
- US 21%

Careers of our PhD alumni

- Industry 74%
- Academia 26%
- Switzerland 20%
- EU 43%
- Asia 32%
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nada Amin</td>
<td>Assistant Professor</td>
<td>Harvard</td>
</tr>
<tr>
<td>Alexandros Daglis</td>
<td>Assistant Professor</td>
<td>Georgia Tech</td>
</tr>
<tr>
<td>Ivan Dokmanic</td>
<td>Assistant Professor</td>
<td>UIUC</td>
</tr>
<tr>
<td>Hamed Hassani</td>
<td>Assistant Professor</td>
<td>UPenn</td>
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<tr>
<td>Amin Karbasi</td>
<td>Assistant Professor</td>
<td>Yale</td>
</tr>
<tr>
<td>Baris Kasikci</td>
<td>Assistant Professor</td>
<td>Michigan</td>
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<tr>
<td>Heather Miller</td>
<td>Assistant Professor</td>
<td>Carnegie Mellon</td>
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<tr>
<td>Ayfer Ozgur</td>
<td>Associate Professor</td>
<td>Stanford</td>
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<tr>
<td>Ruzica Piskac</td>
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<td>Yale</td>
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<tr>
<td>Tiark Rompf</td>
<td>Assistant Professor</td>
<td>Purdue</td>
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<tr>
<td>Immanuel Trummer</td>
<td>Assistant Professor</td>
<td>Cornell</td>
</tr>
<tr>
<td>Manos Athanassoulis</td>
<td>Assistant Professor</td>
<td>Boston</td>
</tr>
</tbody>
</table>
In conclusion ...

- Rich intellectual environment with international focus
- Graduate students collaborate with world-renowned faculty
- Benefit from generous resources and 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
Need more information ...

go.epfl.ch/phd-edic
edic@epfl.ch