A vibrant campus
School of Computer and Communication Sciences - IC

- Internationally highly ranked
- 53 Professors + 2 new hires in 2023-24: ML
- From peer schools (e.g., Berkeley, CMU, Cornell, MIT, Stanford, …)
- Internationally recognized (e.g. US Academies, top ACM Fellows in Europe/UK)
- Strong industrial liaison
- Information theory to datacenters
theory, foundations, fundamental limits…
learning from data, extracting knowledge, transforming data …
building real systems, all layers…
interfacing with humans …
theory, foundations, fundamental limits...

Alessandro Chiesa

Hands-on, energetic, perfectionist.

We work on the theoretical foundations and practical realizations of cryptographic proofs. This enables checking the correctness of a computation in zero knowledge, and much faster than re-running the computation.

Learn more on go.epfl.ch/phd-edic

Computation Security
https://ic-people.epfl.ch/~achiesa/

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

Theoretical Computer Science
https://theory.epfl.ch/osven/
theory, foundations, fundamental limits...

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 go.epfl.ch/phd-edic

Statistical Physics of Computation
https://www.epfl.ch/labs/spoc/

Patrick Thiran
Curious, perfectionist, thoughtful.

My interests are in probabilistic and data-driven models of networks and dynamic processes taking place on networks (including learning, inference and optimization).

Learn more on go.epfl.ch/phd-edic

Information and Network Dynamics
https://indy.epfl.ch/

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

Theoretical Computer Science
https://theory.epfl.ch/mika/
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 go.epfl.ch/phd-edic

Nicolas Macris
Passionate, persistent, loves science.
My research revolves around high-dimensional computation and inference problems. Analogies with statistical mechanics of large numbers of interacting degrees of freedom are at the heart of the methods we use.
Learn more on go.epfl.ch/phd-edic

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

Statistical Mechanics of Inference in Large Systems
https://www.epfl.ch/schools/ic/ipg/
learning from data, extracting knowledge, transforming data ...

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

Theory of Machine Learning
https://www.epfl.ch/labs/tml/

Machine Learning and optimization
https://www.epfl.ch/labs/mlo/

Machine Learning for Education
https://www.epfl.ch/labs/ml4ed/

Tania 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.

Learn more on go.epfl.ch/phd-edic

Martin Jaggi

Likes practical theory and climbing.

We work at the intersection of optimization and deep learning research. For example, collaborative learning methods can enable new applications while preserving privacy with knowledge sharing between machines or humans.

Learn more on go.epfl.ch/phd-edic
Building systems, all layers ...

Haitham Al Hassanieh

*Persistent, ambitious, intellectually-curious.*

My research goal is to connect and sense the world using wireless networks and sensors. I work across the stack from hardware and signal processing to network algorithms, protocols, and applications.

Learn more on go.epfl.ch/phd-edic

Sensing and Networking Systems
https://www.epfl.ch/labs/sens/

Carmela Troncoso

*Doesn’t believe that privacy is dead.*

Work with us to protect vulnerable populations by helping NGOs digitalize in a safe way.

Learn more on go.epfl.ch/phd-edic

Security and Privacy Engineering
https://www.epfl.ch/labs/spring/

Mathias Payer

*Capture-the-flag, GeoCaching, nerd.*

We 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

HexHive
https://hexhive.epfl.ch/
Building 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

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

Edouard Bugnion

Impact-oriented, Swiss, multi-tasker.

Interested in operating systems, data center infrastructure (systems and networking), and a bit of computer architecture. I am specifically researching how to make cloud computing more efficient and trustworthy.

Learn more on go.epfl.ch/phd-edic

Data Center Systems
https://www.epfl.ch/labs/dcsl/

Paolo Ienne

Passionate about digital hardware and design automation.

Excellent performance in computing systems is the result of a judicious blend of computer architecture, compiler technology, and hardware implementation. I love to play across their boundaries to uncover synergies and explore disruptive ideas.

Learn more on go.epfl.ch/phd-edic

Processor Architecture
https://www.epfl.ch/labs/lap/
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-edic

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-edic

Parallel Systems Architecture

https://parsa.epfl.ch/
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.

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.

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

Robust Scalable Systems Software
https://rs3lab.github.io/
Interfacing with humans ...

Sabine Süssstrunk
Curiosity, challenge, aesthetics.
Our research interests are in computational photography and computer vision. Aiming to improve everyone’s photographic experience, we develop models, algorithms, and systems that help to understand, process, and measure images.

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

Learn more on go.epfl.ch/phd-edic

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?

Visual Intelligence and Learning
http://vilab.epfl.ch/zamir/

Computer Vision
https://www.epfl.ch/labs/cvlab/

Learn more on go.epfl.ch/phd-edic

Pascal Fua
Pilot, skier and sometime researcher.
Computer Vision fascinates me because trying to emulate the human ability to see is tantamount to trying to emulate the human mind. We are not there by any stretch of the imagination.

Learn more on go.epfl.ch/phd-edic
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

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

Mark Pauly
Creative, curious, passionate.
Our research aims to empower creators. We develop efficient simulation and optimization algorithms to build computational design methodologies for advanced material systems and digital fabrication technology.
Learn more on go.epfl.ch/phd-edic

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

**Antoine Bosselut**
*Empathetic, imaginative, enthusiastic.*

My group designs natural language systems that can represent and reason about human and world knowledge.

Learn more on [go.epfl.ch/phd-edic](https://go.epfl.ch/phd-edic)

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**Robert West**
*Data is beautiful!*

In the Data Science Lab, we distill data into insights by building and using tools in NLP, applied machine learning, and computational social science.

Learn more on [go.epfl.ch/phd-edic](https://go.epfl.ch/phd-edic)

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**Natural Language Processing**
[https://atcbosselut.github.io/](https://atcbosselut.github.io/)

**Data Science**
[https://dlab.epfl.ch/](https://dlab.epfl.ch/)
IC research centers

- Swiss Data Science Center
- Center for Digital Trust
- CIS Center for Intelligent Systems
- Center for Quantum Science and Engineering
- EcoCloud
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
EDIC doctoral program
go.epfl.ch/phd-edic

In a nutshell
- 4-6 years duration, in English
- Competitive salary (~$50k/y)
- Award winning faculty and students
- Strong industrial liaison

In numbers
- 310 PhDs, among campus largest
- 90% international students
- 50-60 join per year
- ~5 PhD students per faculty
EDIC doctoral program

- Similar to the US doctoral programs; doctoral students do not apply directly to a professor, but to a program.
- Admission is evaluated 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.
- 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 encouraged but not a firm requirement (in case you are only interested in a single lab).
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)
  - Faculty member beyond (from outside area)
  - Someone to talk to in general
**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>
</tr>
<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>
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<td>• Bosch</td>
<td>• Oracle</td>
<td>• Haifa U.</td>
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<tr>
<td>• DeepMind</td>
<td>• OrbiWise</td>
<td>• Harvard</td>
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<td>• Disney Research</td>
<td>• Qualcomm</td>
<td>• HKUST</td>
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<td>• SAP</td>
<td>• INRIA</td>
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<td>• HP</td>
<td>• Synopsys</td>
<td>• MIT</td>
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<td>• Huawei</td>
<td>• Swisscom</td>
<td>• NUS</td>
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<td>• IBM</td>
<td>• Technicolor</td>
<td>• NYU</td>
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<td>• Intel</td>
<td>• Uber</td>
<td>• Queensland U.</td>
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<td>• Meta</td>
<td>• VMWare</td>
<td>• Stanford</td>
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<tr>
<td>• Microsoft</td>
<td>• Walt Disney</td>
<td>• Toronto U.</td>
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<td>• X</td>
<td>• UIUC</td>
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<tr>
<td>• Natunix</td>
<td>• Xilinx</td>
<td>• Vienna U.</td>
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<td>• Washington U.</td>
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EDIC PhD & Fellowships Laureates
Since 2019 …
EDIC Graduates: From where to where?
592 graduates 2006-2020

Where do our students come from:
- Asia: 32%
- EU: 44%
- Switzerland: 18%
- Americas: 5%
- Africa: 1%

Where our PhD alumni Go:
- Switzerland: 55%
- Asia: 7%
- EU: 17%
- US: 21%

Careers of our PhD alumni:
- Academia: 25%
- Industry: 75%
Some EDIC alumni in academia

Nada Amin
Assistant Professor, Harvard

Alexandros Daglis
Assistant Professor, Georgia Tech

Hamed Hassani
Associate Professor, UPenn

Lana Josipović
Assistant Professor, ETHZ

Baris Kasikci
Associate Professor, Washington

Heather Miller
Assistant Professor, Carnegie Mellon

Ayfer Ozgur
Associate Professor, Stanford

Ruzica Piskac
Associate Professor, Yale

Mina Konakovic-Lukovic
Assistant Professor, MIT

Immanuel Trummer
Assistant Professor, Cornell

Manos Athanassoulis
Assistant Professor, Boston

Marios Kogias
Assistant Professor, Imperial College
Some EDIC alumni in companies
EDIC Admission Cycles
go.epfl.ch/phd-edic

- 1st admission cycle
  - deadline December 15
    - Main admission cycle
    - Synchronized with US/Canada
    - Visit the OpenHouse in Spring
    - 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

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

- Interviews window on 10-18 January, prior to offer finalization
- Enrollment in Sept.

- Approx. 900 applications over both rounds
- Enroll roughly 50-55 (approx. 20% from EPFL MS)
- Accept the top ~45 ranked as fellowship (approx. 20% from EPFL MS)
EDIC Application Process

See the EDIC webpage for specific requirements.

Go through IC faculty webpages to carefully 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?
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