Welcome to EPFL

phd.epfl.ch/edic
Your Next Few Years

- Courses
- Research
- Publish
- TA
- Attend Conferences
- Internships
- Defense

4~6 years
During your stay at EPFL

• **You will have a thesis advisor/co-advisor:**
  – Will be with you until you graduate
  – You will find one (or a pair) this semester
  – Courses, research, career planning

• **You will have a mentor:**
  – EDIC Committee contact person for 1\textsuperscript{st} year
  – An IC faculty member beyond (from outside area)
  – Someone to talk to in general
Make sure faculty know you while you are here

**Why?**

- Your career starts here, need reference letters!
- Most of top/well-known people you come across in the next five years are right here

**How?**

- Take courses, be visible
- Organize research seminars
- Excel in TAing

When it’s letter writing time, faculty will remember!
EDIC Staff

Cecilia Chapuis
Admissions
1st Year Students
Candidacy Exam

Corinne Degott
General Admin
Courses
Annual Evaluations

Eileen Hazboun
Applications
Industrial Awards
Liaison with IC
School & Deanship

Your obligation: answer their emails!
Annual Evaluations

• 2\textsuperscript{nd} year onwards:
  – Official annual evaluations
  – You and your advisor(s) fill out a form
  – Your official feedback of how you are doing

• Mid-year evaluations if annual evaluations are:
  – Unsatisfactory or needs improvement
Why Annual Evaluations

• We want to know if we can help:
  – Discuss concerns at the committee level
  – Bring it up to advisor/mentor’s attention
  – Make sure you and your advisor(s) on same page

• We would like to know superstars/top players:
  – You will get free publicity if faculty know you
  – Other schools will know who are our best
TAing

Your EPFL contract requires that you spend 20% of your time teaching.

- **In practice, this means that you are expected to help:**
  - TA
  - Proctor and grade written exams
  - Witness oral exams

**Exceptions to the rule are:**

- First + last semester in the program
- First year students having failed candidacy
Graduation Requirements: Depth & Breadth

• You will graduate with both depth & breadth:
  – Depth: Want you to be expert in your area
  – Breadth: Want you to know a bit outside area

• Depth:
  – 1st year, focus on research, depth course, semester projects, candidacy exam
  – after 1st year, research + breadth
Graduation Requirements: Depth & Breadth

Candidacy Areas: AI, Systems, Theory

1. Depth (1st year):
   - Choose a depth area (one of above 3)
   - Pass a depth course with a grade of 5
   - Pass the candidacy exam

2. Breadth:
   - The other 2 areas are breadth areas
   - Pass 4 credits from each of the breadth areas
### Depth Courses

#### Artificial Intelligence

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester</th>
<th>Instructors</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM-514</td>
<td>Mathematical foundations of signal processing</td>
<td>F</td>
<td>Kolundzija, Parhizkar, Scholefield</td>
</tr>
<tr>
<td>CS-430</td>
<td>Intelligent Agents</td>
<td>F</td>
<td>Faltings</td>
</tr>
<tr>
<td>CS-433</td>
<td>Machine Learning</td>
<td>F</td>
<td>Urbanke, Jaggi</td>
</tr>
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#### Systems

<table>
<thead>
<tr>
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<th>Instructors</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-422</td>
<td>Database systems</td>
<td>S</td>
<td>Ailamaki</td>
</tr>
<tr>
<td>CS-471</td>
<td>Advanced multiprocessor architecture</td>
<td>F</td>
<td>Falsafi</td>
</tr>
<tr>
<td>CS-472</td>
<td>Design technologies for integrated systems</td>
<td>F</td>
<td>De Micheli</td>
</tr>
<tr>
<td>CS-522</td>
<td>Principles of computer systems</td>
<td>F</td>
<td>Argyraki, Candea</td>
</tr>
</tbody>
</table>

#### Theory

<table>
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<th>Course Title</th>
<th>Semester</th>
<th>Instructors</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM-401</td>
<td>Cryptography and security</td>
<td>F</td>
<td>Vaudenay</td>
</tr>
<tr>
<td>COM-404</td>
<td>Information theory and coding</td>
<td>F</td>
<td>Telatar</td>
</tr>
<tr>
<td>COM-417</td>
<td>Advanced probability and applications</td>
<td>S</td>
<td>Lévêque</td>
</tr>
<tr>
<td>CS-450</td>
<td>Advanced algorithms</td>
<td>S</td>
<td>Svensson</td>
</tr>
</tbody>
</table>

F = Fall Semester // S = Spring Semester
Breadth Courses

• Any 4XX or above from IC or related programs

• Courses divided into the 3 areas:
  – AI, Systems, Theory

• Need to take 4 credits from each of 2 areas
  – The third area is your Depth Area
Breadth Courses

**AI**
- CS-413 Computational photography
- **CS-430 Intelligent agents**
- CS-431 Introduction to natural language processing
- **CS-433 Machine learning**
- CS-439 Optimization for machine learning
- CS-440 Advanced computer graphics
- CS-442 Computer vision
- CS-444 Virtual reality
- CS-446 Digital 3D geometry processing
- CS-456 Artificial neural networks
- CS-486 Human-computer interaction
- CS-489 Personal interaction studio
- CS-718 Topics in computational social science

**Systems**
- COM-402 Information security and privacy
- COM-407 TCP/IP networking
- COM-413 Real-time networks
- COM-414 Satellite communication systems and networks
- **COM-430 Modern digital communications: a hands-on introduction**
- COM-502 Dynamical system theory for engineers
- **COM-503 Performance evaluation**
- COM-506 Student seminar: security protocols and applications
- CS-410 Technology ventures in IT
- CS-420 Advanced compiler construction
- CS-422 Database systems
- CS-473 Embedded Systems
- CS-476 Real-time embedded systems
- CS-487 Industrial automation
- CS-490 Business design for IT services
- CS-491 Enterprise and service-oriented architecture
- **CS-522 Principles of computer systems**
- CS-622 Advanced topics on privacy protection
- CS-712 Topics on datacenter design
- CS-719 Understanding datacenter software dynamics
- EE-473 Smart grid technologies

**Theory**
- **COM-401 Cryptography and security**
- COM-404 Information theory and coding
- COM-405 Mobile networks
- **COM-417 Advanced probability and applications**
- COM-421 Statistical neurosciences
- COM-500 Statistical signal and data processing
- COM-501 Advanced cryptography
- COM-512 Networks out of control
- COM-514 Mathematical foundations of signal processing
- COM-516 Markov chains and algorithmic applications
- COM-611 Quantum information theory and computation
- **CS-435 Analytic algorithms**
- CS-437 Algebraic coding theory
- CS-448 Sublinear algorithms for big data analysis
- CS-450 Advanced algorithms
- CS-451 Distributed algorithms
- CS-452 Foundations of software
- CS-453 Concurrent algorithms
- CS-454 Convex optimization and applications
- **CS-550 Synthesis, analysis and verification**
- CS-714 Games for crowds and networks
- MATH-318 Set theory
- MATH-438 Gödel and recursivity

List online at: [phd.epfl.ch/edic/courseoffering](http://phd.epfl.ch/edic/courseoffering)
Graduation Requirements: Credits

• Need a total of 30 credits to graduate:
  ✓ 12 credits => Semester projects (1st year)
  ✓ 6-7 credits => Depth course
  ✓ 8 or more credits => Breadth courses
  ✓ 4 other credits => Flexible
1st Year Requirements in a Nutshell

• Requirements:
  ✓ Must pass depth course with a 5
  ✓ Must pass the candidacy exam

• Both conditions should be met to progress

• Do not take this lightly!
Candidacy Exam: The Philosophy

• **After one year of PhD you can:**
  – Read, understand and explain technical papers
  – Present them briefly and explain how they influence your work
  – Answer questions about the papers, your write-up and BS/MS basic background material in the area

• **Exam focused on:**
  – Presentation, submitted material + basic background
  – Both depth and breadth

• **What this exam is not:**
  – A comprehensive exam for all work in an area
  – Anything the faculty feel «you ought to know»
Exam Evaluation Criteria

✓ Writing skills
✓ Oral skills
✓ Depth and breadth of knowledge
✓ Ability to interpret results
✓ Critical thinking and problem-solving skills

• There will be a full presentation on the candidacy exam in February 2018
Fellowship students – this week + next

• **Contact professors within IC school**
  (if you haven’t already)
  – In your areas of interest
  – Make sure you have followed up on their work
  – Meet them/their group ASAP

• **Attend the research seminars**

• **When approaching faculty**
  – Make sure they have a slot to hire next year
  – Sign up for a project with them

*Research Areas*: [http://phd.epfl.ch/edic/research]
This week + next

• Work:
  – French in the morning
  – Reception and enrollment (by appointment)
  – Research seminars in the afternoon

• Play:
  – EDIC Welcome Party today (6pm)!
  – EPIC Social Activities
  – EDIC, EDOC Excursions

Schedule: http://phd.epfl.ch/edic/orientation
Research Seminars in BC 420

Sep 5  - Candea, Jakob, Larus, Ailamaki
Sep 6  - Dillenbourg, Thiran, Lévêque, Grossglauser
Sep 7  - Bugnion, Kapralov, Hubaux, Guerraoui
Sep 11 - Boulic, Süsstrunk, Ienne
Sep 12 - Falsafi, Kuncak, Svensson, Gastpar
Sep 13 - Jaggi, Gerstner, Vetterli & Scholefield
Sep 14 - Fua, Pauly & Panetta, Odersky, Urbanke
Sep 15 - Aberer
Sep 19 - West

Check daily at: http://phd.epfl.ch/edic/researchseminars
What is Urgent?

• **Course registration:**
  – Deadline Sept. 28, 2017
  – A detailed email has already been sent

• **Need at least:**
  ✓ One EDIC Depth Course
    – Pick a depth area
  ✓ One Semester Project
    – Fellowship students need to find a Professor

*Registration*: http://phd.epfl.ch/edic/courseregistration
*Project*: http://phd.epfl.ch/edic/projects
Other Things to Know ...

• **Seminars:**
  – [http://ic.epfl.ch](http://ic.epfl.ch), click on events
  – IC seminar, Systems Seminar, SURI,…..
  – Attend, but do not burn out

• **Laptop offers and Helpdesk:**
Last but not least:
You must take your vacation days!

- Five weeks legal vacation days per year
- Be sure to take your vacation before you are transferred to a lab and enter all your days off in the online tool: http://absences.epfl.ch
See you at the Welcome Party!