Everything You Always Wanted to Know About the PhD
But Were Afraid to Ask

PhD

1. What?

2. How?

3. Why?

4. EPFL?

What is a PhD?

A discovery

Any discovery?

Almost...

Non-triviality...

What is a PhD thesis?

Around 150 pages describing:

- how the world was before

- the actual discovery

- why the world is better now

Example: a theorem

The consensus problem is impossible in an asynchronous distributed system

The consensus problem requires t+1 rounds in a synchronous system with t failures

Example: an algorithm

A t+1 synchronous consensus

A spam filter

A fake news detector

A recommender

Example: a programming language

Enabling model-checking

Simplifying parallel programming

Example: a new concept

A complexity metric to measure:
- **the complexity of a program**
- **the efficiency of a network**

Example: a new architecture

A hardware architecture

A new Internet

Example: a system

To P2P stream video

To detect network intrusions

To synchronize concurrent accesses to a shared memory

PhD

1. What?

2. How?

How?

Dive, dive, dive, dive,...

Until you find something

How?

The less subjective criteria:

papers

Judged by peers

Sometimes anonymously

How?

(1) The first steps

You read few papers; you choose one; you improve it;

You build a system; you show it is better than all others (in some respect);

How?

(2) You become expert

You write important papers

How?

(3) The last sprint

You compile few papers into the PhD document

Is this challenging?

Yes

But

You will never walk alone

You will never walk alone

The lab

The school

The world

PhD

1. What?

2. How?

3. Why?

Why?

Freedom

Intellectual challenges

Work with interesting people

Why?

A diploma stating your ability to:

Dive

And tell the world about it

Why?

Researcher/Professor

Fast promotion

CTO: Yahoo, Akamai, Google,...

PhD

1. What?

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4. EPFL?

at EPFL?

Computer Science: Algorithms, computational biology, distributed systems, operating systems, databases, artificial intelligence

Computer Engineering: computer vision, processor architecture, computational vision, logic systems, computer networks, design and media

Communication systems: nonlinear systems, robotics, electromagnetics, wireless and mobile networks, coding and information theory, signal processing

At EPFL?

Nice and prestigious place

International atmosphere

Nice trips (conferences;internships)

At EPFL?

1st year – 5th year
Between 50.000 and 60.000 CHF

Apply mid December; Start in September

1. Courses: a wide range of advances topics

2. Research seminars: you pick the prof

3. Find a thesis supervisor

4. Pass the PhD candidacy exam

-presentation of thesis proposal (20-30 min) followed by oral exam (20-30 min)

-examiners: thesis supervisor and second examiner, presided by a third prof

-exam: reading list (3-4 research papers) chosen 3 months in advance; before September 15, 2010; one retry within 3 months

At EPFL?

Apply in December
http://phd.epfl.ch/edic