

**Welcome to the**

# **Parallel and Distributed Systems track!**

Master in computer science of IP Paris

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- Brings 5 french schools together

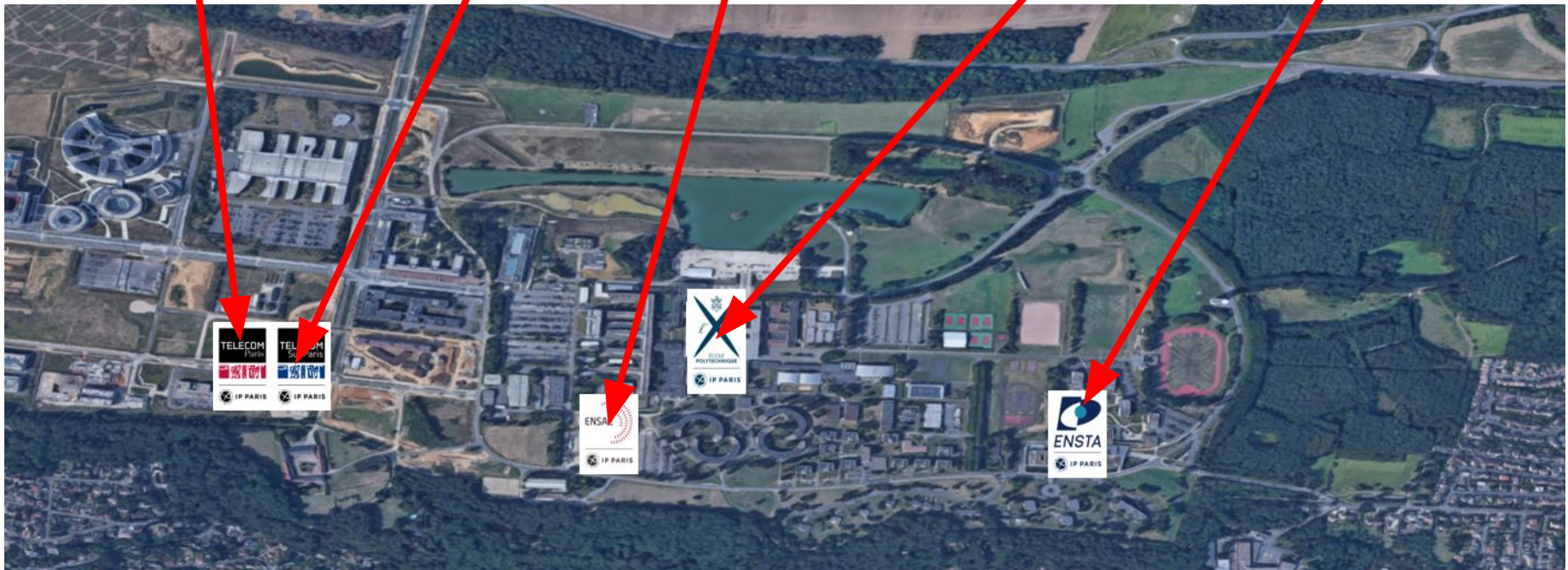
Telecom Paris

ENSAE Paris

ENSTA Paris

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École Polytechnique



# Parallel and Distributed Systems track

- Parallel and distributed systems
  - Consists in distributing the computation over many computing units (from end devices to data centers) connected by networks
  - They are ubiquitous : IA applications, online games, social networks, web services, healthcare simulation...



# Parallel and Distributed Systems track

- Goal of the track : **understand how parallel and distributed systems are designed and implemented**
  - How we can make them **efficient**
  - How we can make them **maintainable**
  - How we can make them **correct**

**Learn distributed systems from both a theoretical and a practical point of view**

# Parallel and Distributed Systems track

## ■ A research oriented track

- Learn the last advances of the field
- Prepare for a PhD through
  - Research projects with your professors (~ 40% of your time)
  - A master thesis of 6 months at the end of the M2 (internship)

## ■ You will start to do research in 15 days!

- You can see the master as the first years of a PhD
- After the master, you are supposed to pursue with a PhD
  - But, of course, you can leave research and directly work in a company after the master
- If you continue with a PhD, often, your research project advisor during the master will become your PhD advisor

# Organization

- The courses mostly come from the engineering tracks of the schools of IP Paris
- In both M1 and M2 (master thesis excluded)
  - Scientific courses to learn new concepts (~50%)
  - Research seminars to know the last scientific advances (~10%)
  - Research projects in IP Paris' labs (~40%)
- During the last 6 months of the M2
  - A master thesis in a research lab
  - Starts between february and march
  - A student can choose a research lab of IP Paris or of any other institute

# The scientific courses

- A student can choose any course from the track
  - We don't distinguish the M1 and the M2
  - But some courses are more basic than others
  - A student can choose 7.5 ECTS from other tracks (provided that it makes sense)
- Very quickly (**ideally today!**), a student has to choose courses
  - The first course (SLR206) starts today :)
- Mandatory ECTS for the scientific courses
  - In M1: 30 ECTS
  - In M2: 17.5 ECTS

# The research seminar

- Goal: learn the last scientific advances of the field
- Each week, we have a research seminar the friday morning
  - The students regularly present research papers
  - For some of the seminars, we invite other researchers
- **Attending the research seminar is mandatory**
  - Except if you have another course at the same time
  - And during the master thesis
- Validation of the research seminar
  - In M1 : 5 ECTS, in M2 : 2,5 ECTS
  - You will have a mark for each of your presentation



# The research projects

- The research project consists in learning research by doing research
  - Between 1 and 4 days each week in a research lab
  - Work with professors and PhD students of IP Paris on ongoing research projects
  - Mainly projects proposed by the professors of IP Paris, but you can also propose your own research project
- Evaluation: through a presentation and a report
  - In M1: 30 ECTS, in M2: 12,5 ECTS

# The research projects

## ■ Schedule

- 13/9/2022 at 10am: presentation of the research projects
- 20/9/2022: the research projects start
- 09/2/2023: final presentation for the M2/mid-term for the M1
- 17/2/2023: deadline for the research report for the M2 students
- 22/6/2023: final presentation for the M1 students
- 30/6/2023: deadline for the research report for the M1 students

# The master thesis (internship)

- M2 master thesis
  - Mandatory (30 ECTS)
  - 6 months, usually starts in february or march
  - A student can continue his/her M2 research project
  - A student can also do a master thesis in any university
  - The student can also do an internship in a company if clearly research-oriented
  
- You can also do a M1 summer internship
  - Not mandatory, just a possibility
  - 1 or 2 months during the summer
  - Does not give ECTS
  - A student can continue his/her M1 research project during the internship

# And after the PDS track

- A student is supposed to continue a PhD thesis
  - The highest level diploma, recognized by all the main IT companies
  - 3 years, with a salary of roughly 2000 euros/month
  - A PhD consists in doing research, just like during the master :)
  - After a PhD, a student can work in a company or in a university (80/90% in company, 10/20% in university)
- A student can also work in a company
  - In a research and development division or in a pure development division

# The schedule

- You can find it on the web page <https://cs.ip-paris.fr/courses/tracks/pds/>
- Warning: the schedule of the PDS web site is just a copy of the official schedule given by the different schools few days ago. The schools may re-schedule some courses and the PDS web site may become inconsistent (a typically buggy state machine replication protocol :))

# And now...

- ... let's choose your courses!

<https://cs.ip-paris.fr/courses/tracks/pds/?page=../common/courses>