Masters 2 Research in Computer Science at ENS Paris-Saclay

Welcome to all!

https://lmf.cnrs.fr/deptinfo-ens/M2/

JEAN GOUBAULT-LARRECQ, SEPTEMBER 8TH, 2023

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Masters 2 Research at ENS-P.S.

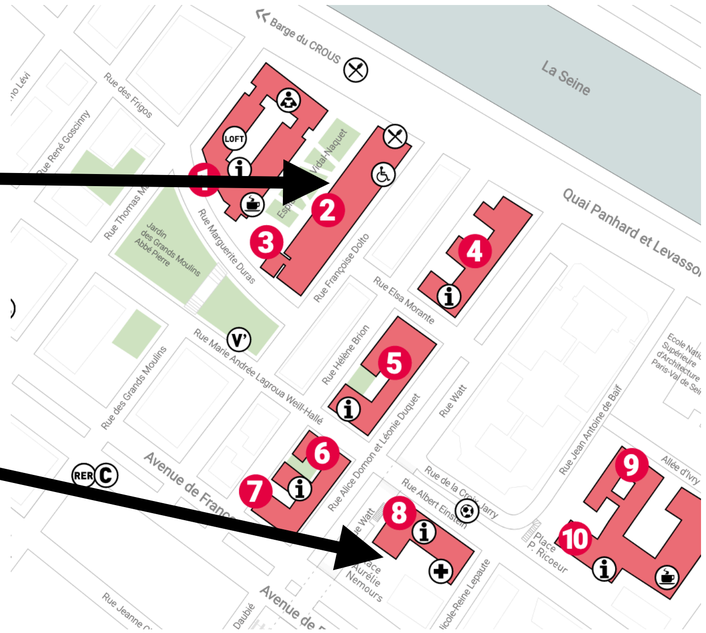
- Make a **start** on a scientific domain for which **you feel inclined**
- **Acquire** a specialized scientific culture
- Foster your **skills**: autonomy, analysis, communication, etc.
- **Pioneer** a field with high impact
- **Represent** ENS Paris-Saclay

Possible Tracks in *Computer Science*

- **MPRI**: Master Parisien de Recherche en Informatique
  Université de Paris, ENS Paris, Université Paris-Saclay, IPP
- **MVA**: Mathématiques, Vision et Apprentissage
  ENS Paris-Saclay
- **MPI**: Master Recherche Informatique
  Graduate School, Université Paris-Saclay
- **LMFI**: Logique, Mathématique, et Fondements de l'Informatique
  Université de Paris
- **STL**: Master Informatique parcours « Science et Technologie du Logiciel »
  Sorbonne Université

MPRI

- MPRI is the default masters program for computer science students hence let me concentrate on it
- MPRI meeting: Monday, September 11th, 2023, 10h
  amphithéâtre 12E
  Halle-aux-Farines
  RER C / M14 Bibliothèque François Mitterrand
  Tram T3 Avenue de France
- Courses will take place in building Sophie Germain



MPRI Modules

- Two kinds of courses: **full** courses: 48 hours, 6 ECTS | **half** courses: 24 hours, 3 ECTS
- List of modules on **pedagogical server**:
  https://wikimpri.dptinfo.ens-cachan.fr/doku.php?id=cours:cours2
  - *Logic and models of computation*
  - *Programming languages*
  - *Algorithms and complexity*
  - *Proof theory and automated verification*
  - *Data science*

2·1	Kesner
2·2	Melliès
2·3·1	Haucourt
2·3·2	Palamid
2·8·2	Bouyer
2·16	Picantin
2·20·1	Zielonka
2·20·2	Berthé
2·40	Tasson

2·4	Rémy
2·19	Fages
2·23·1	Pouzet
2·35·1	Soliman

2·10	Schaeffer
2·11	Rosén
2·11·1	Schabanel
2·11·2	Magniez
2·12·1	Abdalla
2·12·2	Morain
2·13·1	Faugère
2·15	Ravelomanana
2·18·1	Fraigniaux
2·22	Chyzak
2·33·1	Charron-Bost
2·33·2	Périfel
2·33·3	Bournez
2·34·1	Laplante
2·34·2	Chailloux
2·38·1	Pilaud
2·39	Tierny

2·5·1	Treinen
2·6	Miné
2·7·1	Dowek
2·7·2	Barras
2·9·1	Goubault-Larre
2·9·2	Bouajjani
2·30	Blanchet
2·36·1	Marché

2·14·1	Glisse
2·24·1	Angelopoulos
2·24·2	Doerr
2·26·1	Segoufin
2·26·2	Amarilli
2·27·1	Schmitz
2·29·1	Naserasr
2·29·2	Sozio

How to choose a course at MPRI (1/2)

- Make a diverse but **coherent** choice, before **September 30th**
  I will talk with each of you, individually, during the month of September
  - … totalling **≥30 ECTS** — aim for a bit more, say 33 or 36
  - … with **≥18 ECTS** from MPRI level 2 courses — ≥24 in order to be ranked (→ PhD grants)
  - put them on the pedagogical server
- Other courses taken from other masters + MPRI level 1 courses (M1)
  Coherence, **not redundancy**
- **Approval required** (by JGL)

How to choose a course at MPRI (2/2)

- Make a diverse but **coherent** choice
  Choose a **main theme**, and secondary courses
- Other courses can be taken from other masters + MPRI level 1 courses (M1)
  Coherence, **not redundancy**
- Try the courses for the first two weeks
- Keep some time to work by yourselves
  you will *need it*
- Check evaluations of former students
  and fill one at the end of the course

Validation, ranking

- **Validation**: exams ≥30 ECTS + internship;
  no repeating the M2 year (**pas de redoublement**)
- **Ranking** (for PhD funding programs):
  ≥24 ECTS from MPRI level 2 (M2) courses (**only**!)
  - **marking** algorithm:

Course	mark	ECTS
A	14.5	6
B	8.0	6
C	17.5	3
D	12.0	6
E	0.0	3
F	16.0	6
G	11.5	6
H	12.5	3
I	13.0	3
J	15.0	6

sort →

Course	mark	ECTS
C	17.5	3
F	16.0	6
J	15.0	6
A	14.5	6
I	13.0	3
H	12.5	3
D	12.0	6
G	11.5	6
B	8.0	6
E	0.0	3

sum to ≥30 ECTS

Cut here (courses G, B, E are ignored)

  - if between 24 and 30 ECTS, just take all grades into account
  - **Note**: leaving a course may help you obtain higher marks, but increases risk of failing the masters

Choosing an internship

- Validate **whatever** masters program you choose
- Start looking for an internship as **early** as you can, typically November
- Meet several potential advisers, e.g., after class — at least 3
- Announces on **pedagogical server** / from other institutions / advice from friends / teachers / etc.
- **Ask JGL**—I can help
- Do not just ask about scientific matters, but also:
  — availability of adviser
  — possibility of continuing with a PhD (including possibility of funding)
  — work environment (meet the rest of team, PhD, postdocs)
  — be sure there is **some research content** (especially in industry)

Approval of internship

- **December**: send choice of internship to JGL, with **rationale**
- **January**: approval by JGL, after discussion. Main constraints:
  - Topic is **precise** enough
  - Adviser is **scientifically** acceptable
  - Time period matches
  - **At most 1** MPRI M2 student **per adviser** in any given year
  - [**At most 3** ENS Paris-Saclay students **per lab** in any given year — mostly obsolete]
- **Internship agreement** (convention de stage): see with ENS Paris-Saclay, needed for Diplôme
  Must be signed **before** internship starts; **takes time!** lots of steps, which you don’t see

Approval of internship

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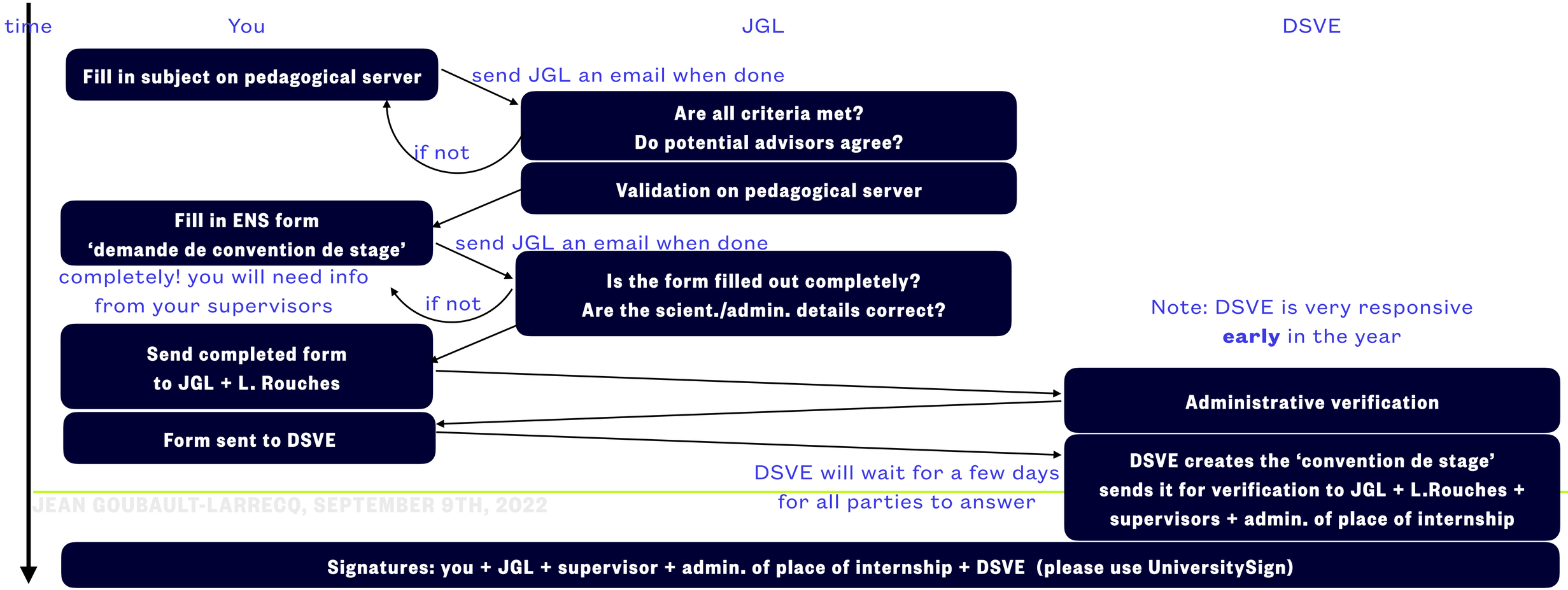

During the internship

- Track early **signs of failure**
  Beware of everlasting « does not quite work yet but should be OK in a few days » syndrome
- **Talk** to your colleagues, tutors, teachers, PhD students, postdocs
- **Tell** JGL about your problems — earlier is better
- Every problem has a solution,
  no matter how intricate it seems to be

Writing up your report and defending

- Explore **state of the art**
- What is *your* **contribution**?
- Do not overestimate the reader
  Clear and precise definitions; no obscure notation; every choice is motivated; etc.
  *At school, the teacher knew more than you; now **you** know more, and **you** must explain*
- **Motivate** your work
  Choices made in the report are **your own**, not your adviser's
- Step back, get the **big picture**, and explain it
- Do not try to be exhaustive (exhausting?), concentrate on the **important** / **novel** points
  and stress their importance / novelty
- Turn in your report **on time**
- Defenses early September (from 1st to 7th in 2023): **check your availability and be there**
  (are you going to a workshop/conference in this period? are you starting class/a new job?)

Each of these points will be marked

Fourth year students: prepare for your PhD

- For ENS Paris-Saclay students: apply to **CDSN** fellowships
  http://dpted.ens-paris-saclay.fr/version-francaise/financement-de-these/contrats-specifiques-pour-normaliens/

- For ENS Paris-Saclay « normaliens étudiants »: **PhD track**
  open to 3rd and 4th year students of the Diplôme de l'ENS Paris-Saclay
  https://ens-paris-saclay.fr/sites/default/files/2021-02/CS%202020-12-04%20-%20point%206%20Reglement_PhD%20track_4.pdf

- **Graduate School CS** (Computer Science) of Université Paris-Saclay
  https://www.universite-paris-saclay.fr/programme-doctoral-en-informatique-et-sciences-du-numerique-graduate-school-informatique-et-sciences-du-numerique-isn

- Paris-Saclay is not the center of the world: apply **elsewhere**
  … elsewhere in France, in Europe, or outside Europe

Third year students: prepare for your fourth year

- Three possibilities
  - Want to explore another discipline? (mathematics, linguistics, biology, physics, etc.)
    First define your **scientific project**
  - **Agrégation**: agrégation d'informatique just created
    préparations at Université Paris-Cité, ENS Rennes, ENS Lyon
  - **ARPE**: outside France, **not** your future PhD lab
  - **Année interface**

Look into the future

- The M2 year will usually define what you will do during a PhD
- Your PhD years will usually define what you will do during your whole career
- What do you want to work on during your future career?
- **Now** is the time to think about it.