

# PhD interview presentation

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Master's thesis midway presentation  
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# Presentation Overview

- 1 Introduction
- 2 Programming experience
- 3 Master's thesis

# Academic Background

Summary and interest?

## Education

- Bachelor in physics
- Master in Computational Science: Materials Science

## Interest

- Computational approach
- Design and creation
- Optimization problems
- Machine learning

# Programming experience

## Summary

- Python
  - Work horse for most of my work
- C++
  - Computational physics project work and teaching C++ (TA)
- C
  - High performance computing course. Optimization, Cache, ...
- Julia
  - Sommerjob brain modeling with finite element analysis using Gridap and Gmsh for creating mesh geometries.
- LAMMPS
  - Research assistant modelling contact forces, and main part of my master thesis measuring friction in MD simulations for graphene sheet on substrate.

# Programming experience

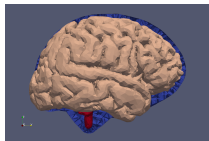
## High level languages

### Python

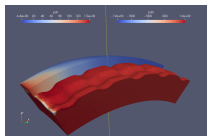
- Workhorse of all my work.
- Object oriented code.
- Machine learning through PyTorch and TensorFlow.

### Julia

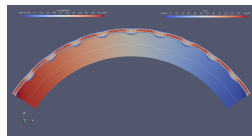
- Alternative to Python
- Finite element analysis using Gridap
- Mesh geometris using Gmsh



(a) ...



(b) ...



(c) ...

Figure

# Programming experience

## Lower level languages

### C++

- Object oriented code.
- Project work in computational physics.
  - Eigenvalue problems and matrix operations.
  - Ordinary and partial differential equations
  - Integration
  - Simulation of stochastic systems.
- Two years teaching assistant.

### C

- High performance computing
  - General code optimization.
  - Data traffic and cache management.
  - Parallel programming (MPI and OpenMP).
  - Modern data architecture.

# Programming experience

Molecular dynamics

## LAMMPS

• ...  
- ...

# Programming experience

Machine learning

Pytorch

- ...
  - ...



# Master's thesis

Scope