

# Johan Gras

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## EDUCATION

### CERGY-PONTOISE UNIVERSITY

MSC IN ARTIFICIAL INTELLIGENCE

Oct 2019 | Cergy, France

### PARIS-SACLAY UNIVERSITY

BS IN COMPUTER SCIENCE

June 2017 | Orsay, France

## COURSEWORK

### ARTIFICIAL INTELLIGENCE

Machine Learning

Neural Networks

Graph and Tree Search

Computer Vision

Reinforcement Learning + Practicum

Genetic Algorithm

Optimization Methods

Probabilities and Statistics

Signal Processing

### COMPUTER SCIENCE

Advanced Algorithmic

Advanced Databases

Oriented-Object Programming

Embedded Computing

System and Networking

Web Development

Compilation and Formal Language

## SKILLS

### PROGRAMMING

Mastered:

Python • C • Numpy • Tensorflow

Advanced:

Java • C++ •  $\text{\LaTeX}$  • SQL • Neo4J

Matplotlib • Scikit-learn • Pytorch

Familiar:

Javascript • PHP • HTML • CSS

OCaml • Matlab • Assembly

### DEVOPS

Git • Unix • Bash

Google Cloud • Jenkins

## EXPERIENCE

### THALES | RESEARCH SCIENTIST INTERN (ML)

Apr 2019 - Sep 2019 | Montreal, QC, Canada

Optimization of resources allocation on flying assets through Deep RL.

- **Shaped** policies capable of adaptation to a variety of simulated scenarios.
- **Built** a RL framework that seamlessly integrates into a complex simulator.
- **Gathered** the efforts of scientific and engineering teams by bridging their vision and knowledge gap together in order to efficiently build our system.

**Leveraged knowledge in:** Python, Tensorflow, Git, automated testing (Pytest), continuous integration (Jenkins), AGILE methods, DQN and Policy Gradient.

### THALES | SOFTWARE ENGINEERING INTERN

Jul 2018 - Sep 2018 | Elancourt, France

Creation of a desktop application to design and manage a traffic simulation.

- **Redesigned** the way to create a scenario by building a clean user interface.
- **Reduced** by an order of magnitude the average time to create a simulation through the automatisisation of: map importation, traffic and events generation,...
- **Decoupled** the backend from the frontend by building two distinct applications communicating through a REST API.

**Leveraged knowledge in:** Python, Java, Flask, Swing, Git, traffic simulation (SUMO).

## PROJECT

### MY PORTFOLIO | JOHAN-GRAS.GITHUB.IO

### PUZZLE REASSEMBLY | MASTER RESEARCH PROJECT

- **Tackled** the jigsaw puzzle reassembly problem in a context where boundary information is missing.
- **Used** Deep RL with Monte Carlo Tree Search to arrange the puzzle pieces with a perfect reconstruction rate of 63% (9 eroded pieces on the MNIST dataset).
- **Presented** methodology and results in a research paper.

**Used:** Python, Tensorflow, Model-Based Reinforcement Learning (Alpha-Zero like).

### BIG COOKING DATA | DATA SCIENCE PROJECT

- **Scraped** over 100 000 cooking recipes from the web.
- **Pre-processed** highly inconsistent data using NLP techniques.
- **Created** new data by identifying cluster of data using kmeans, PCA and NLP...
- **Clustered** data using un-supervised ML techniques (kmeans and PCA).
- **Developed** a recommender system for recipes based on user-preferences and ingredient proximity.
- **Built** a computer vision app that automatically register shopped food items.

**Used:** Python, Java, Fast.AI, Scrapy, Scikit-learn, Neo4J, JSF, Tomcat, NLTK.

### INDOOR TRACKING | COMPUTER VISION PROJECT

- **Built** a computer vision project in C, featuring a multi-criteria tracking system.
- **Implemented** a couple of low level algorithms relying on few external libraries.

**Used:** C, Mathematical morphology, Image segmentation, Interest point Detection.