# **Edward Beeching**

GitHub • LinkedIn • Website

6 avenue Philibert Gaillard • Fleurieu-sur-Saone, Rhône-Alpes 69250 06 52 79 72 27 • edbeeching@gmail.com

Nationality:BritishDate of Birth:8th of March, 1986Place of Birth:Bath, United Kingdom

#### **EDUCATION**

PhD Student: Large-scale automatic learning of autonomous agent behavior with structured Deep Reinforcement Learning INSA CITI Laboratory, INRIA's Chroma team. Lyon, France Supervisors: Olivier Simonin, Christian Wolf, Jilles Dibangoye

#### MSc Machine Learning & Data Mining

University of Jean Monnet (Saint-Étienne) Year 2: Erasmus semester at KU Leuven, Belgium.

- Machine Learning
- Neural Networks

• Complexity Theory

• Data Analysis

• Optimization

• Computer Vision

• Light and matter

• Modern Physics

• Relativity

• Physics of uncertainty

• High energy physics

- Natural Language Processing
  Speech Recognition
- Genetic Algorithms

Year 1: Semesters 1 and 2. Achieved first place in class rankings.

- Artificial Intelligence
- Advanced Algorithms
- Computer Networks
- Data Mining

### BSc Physics with Satellite Technology

University of Surrey, Guildford, UK

- Dynamics and control of spacecraft
- General relativity and Cosmology
- Final year project
- Mathematics
- Mathematical and Quantum Physics

## A-Levels (baccalaureate)

Hayesfield School, Bath, UK

• Mathematics • Physics

# EXPERIENCE

#### Research Intern: Deep Reinforcement Learning

INSA CITI Laboratory, Chroma team. Lyon, France Supervisors: Christian Wolf, Olivier Simonin, Jilles Dibangoye, Laetitia Matignon

- Implemented Deep Reinforcement Learning Agents to solve simulated labyrinth environments.
- Created Deep Convolutional and Recurrent Neural Networks in the PyTorch framework.
- Implemented Deep RL algorithms such as Q-learning and Advantage Actor Critic.
- Created custom scenarios to test AI agents in various navigation tasks.
- Ongoing work: Implementation of Spatially Structured Deep RL agents.



Oct. 2018 - Present

August. 2016 - July 2018

- Neural Computing
- Wavelets with applications in Image Processing
- Intro to Machine Learning
- The Semantic Web
- Machine Learning
- Internship

Sept. 2006 - July 2011

- Specialist Physics
- Mathematical Methods
- Space missions
- Experimental Physics
- Classical Physics

Sept. 2002 - July 2005

Feb. 2018 - Aug. 2018

Photography

• Chemistry

## Research Intern: Machine Learning and Signal Processing

Acoem, Department of Innovation. Lyon, France. Supervisor: Christophe Thirrard

- Applied unsupervised pre-processing to wind turbine accelerometer data with a combination of signal processing, principal component analysis and clustering.
- Created Deep Neural Networks with TensorFlow to detect and classify wind turbine defects.

# Senior Geophysicist & Project Leader

Petroleum Geo-Services. Weybridge, UK.

- Managed on shore and offshore teams of up to 8 on seismic data analysis and processing.
- Tested seismic processing solutions including numerous signal and image processing algorithms.
- $\bullet\,$  Ran HPC on the 12th most powerful supercomputer in the world (Cray XC30).
- Collaborated with clients such as BP, Statoil, BG Group, Apache, Noreco & Perenco.
- Resource allocation and risk management, managing clients and stakeholders.
- Peer review of technical presentations detailing results from seismic processing and imaging.

## Intern: Junior Geophysicist

Petroleum Geo-Services. Weybridge, UK. Supervisor: Magdy Sedhom

- Implementated best practice seismic processing and imaging algorithms.
- Created of technical presentations detailing results seismic signal and image processing.
- Minuted and reported on client meetings.
- Performed quality control of results of processing.

## TECHNICAL STRENGTHS

Programming Languages	Python, Java, C++ & Matlab
Deep Learning Frameworks:	PyTorch, TensorFlow(Keras)
Machine Learning Frameworks:	Sklearn
Scientific Frameworks:	SciPy, NumPy, Pandas, Matplotlib
Languages	English (native) & French (intermediate)

## PUBLICATIONS

EgoMap: Projective mapping and structured egocentric memory for Deep RL Beeching, E., Dibangoye, J., Simonin, O, Wolf, C.

Deep Reinforcement Learning on a Budget: 3D Control and Reasoning Without a Supercomputer. Beeching, E., Wolf, C, Dibangoye, J., Simonin, O.

Enhancing 3D SRME to Stop Complex Continental Shelf Slope Topography Obscuring the Seismic Signal. Jones, C.E., Selvage, J.I., Rnholt, G., Wright, J., Naumann, S., Beeching, E.E., Greplowski, Z., Ciotoli, M., Harrison-Fox, D.

July 2011- Aug. 2016

July 2009- August 2010