Edward Beeching

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

EDUCATION

PhD Student: Large-scale automatic learning of autonomous agent behavior with structured Deep Reinforcement Learning *Oct. 2018 - Present*
INSA CITI Laboratory, INRIA's Chroma team. Lyon, France
Supervisors: Olivier Simonin, Christian Wolf, Jilles Dibangoye

MSc Machine Learning & Data Mining *August. 2016 - July 2018*
University of Jean Monnet (Saint-Étienne)
Year 2: Erasmus semester at KU Leuven, Belgium.

- Machine Learning
- Natural Language Processing
- Genetic Algorithms
- Neural Networks
- Speech Recognition
- Neural Computing
- Wavelets with applications in Image Processing

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

- Artificial Intelligence
- Advanced Algorithms
- Computer Networks
- Data Mining
- Complexity Theory
- Data Analysis
- Computer Vision
- Optimization
- Intro to Machine Learning
- The Semantic Web
- Machine Learning
- Internship

BSc Physics with Satellite Technology *Sept. 2006 - July 2011*
University of Surrey, Guildford, UK

- Dynamics and control of spacecraft
- General relativity and Cosmology
- Final year project
- Mathematics
- Mathematical and Quantum Physics
- Light and matter
- Physics of uncertainty
- High energy physics
- Relativity
- Modern Physics
- Specialist Physics
- Mathematical Methods
- Space missions
- Experimental Physics
- Classical Physics

A-Levels (baccalaureate) *Sept. 2002 - July 2005*
Hayesfield School, Bath, UK

- Mathematics
- Physics
- Chemistry
- Photography

EXPERIENCE

Research Intern: Deep Reinforcement Learning *Feb. 2018 - Aug. 2018*
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.

Research Intern: Machine Learning and Signal Processing *March 2017 - Aug. 2017*
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 *July 2011- Aug. 2016*
Petroleum Geo-Services. Weybridge, UK.

- Managed onshore and offshore teams of up to 8 on seismic data analysis and processing.
- Tested seismic processing solutions including numerous signal and image processing algorithms.
- 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 *July 2009- August 2010*
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, TensforFlow, Keras
Machine Learning Frameworks:	Sklearn, tsfresh, HMMlearn
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.