

# Thomas Snell MA(Oxon.)

Green Card Pending (Approx September 2018)

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GitHub: [www.github.com/llens](http://www.github.com/llens) (Top 1% of Python developers by popularity.)

## Personal Statement

I have proven skills in Machine Learning, Data Science and Big Data and I am seeking a role where I can use these skills to find elegant and practical solutions to complex real-world problems while continuing to learn and grow. My natural Mathematics and Physics abilities lend themselves to software prototypes/minimum-working-examples, having moved from the laboratory into roles where I focussed more on coding and have applied this to the fields of Biophysics, Geophysics and Machine Learning.

## Qualifications

- **Geophysics PhD: Durham University: 10/2014 – 9/2018 (Planned)**  
Numerical Simulation of Fluid Overpressure Driven Faulting and Seismicity within Low Porosity Seal and Tight Reservoir Rocks
- **Bachelor of Physics: Upper Second Class Honours: Oxford University: 10/2009 – 6/2013**  
BA(Hons) conferred to MA(Oxon).

## Skills

- Machine Learning / AI
- Big Data / Data Science
- Computational Physics / Geophysics
- Numerical Simulation
- Natural Language Processing (NLP)
- Cloud Computing / AWS
- Deep / Reinforcement Learning

## Platforms / Languages

- Python
- MATLAB
- C/C++
- Scikit-Learn
- Tensorflow/Keras
- Gensim

## Machine and Deep Learning Projects

- **Paddle HR Machine Learning/ Data Science Project – Career Path Prediction: 9/2017 – Present**  
Clustering job titles and predicting a person's next job based on their skills, with end-user selected word embedding and machine learning algorithm, trained on job data from 173 million individuals using distributed cloud computing.  
Position: Data Scientist (Primary Developer), Paddle HR (via Sharpest Minds) (Part-time alongside PhD); Language: Python  
Features: Tensorflow/Keras, Deep Learning, Natural Language Processing, Amazon Web Services(AWS), Cloud Computing, Machine Teaching (Prodigy), Scikit-learn, Bayesian Optimization
- **Cryptocurrency AI Hedge Fund – Deep Reinforcement Learning: 7/2017 – Present**  
An artificially intelligent decentralised market rating system, combined with a deep reinforcement learning system for short term cryptocurrency portfolio management. Fully automated natural language processing system examines cryptocurrency text data for long term value prediction, while a deep reinforcement learning system manages short term portfolio allocation. Position offered based on open source work.  
Position: Chief Data Scientist, Aequicens; Language: Python

*Features: Tensorflow/Keras, Deep/ Reinforcement Learning, Natural Language Processing (300+ stars and 60+ forks on GitHub.)*

- **Quantum Computing Evolutionary Algorithm Design: 7/2017 – Present**

Implemented on top of the IBM Quantum Experience quantum-computing simulator API.

The canonical representation of these algorithms as a discrete array of quantum gates shares simple geometric characteristics with DNA and are susceptible to efficient evolutionary algorithm searches.

Position: Open Source; Language: Python

*Features: Python-DEAP, Evolutionary Algorithm Design, Simulated Quantum Computing*

## Numerical Simulation Projects

- **Subsurface Fluid Flow and Earthquake Nucleation: 10/2014 – 9/2018 (Expected)**

A Computational Geophysics project to deliver new efficient simulation techniques and MATLAB code for Non-Smooth Permeability Evolution to compute whether natural or human subsurface fluid flow (fracking, CCS), could trigger earthquakes.

Position: Geophysics PhD, Durham University; *Language: MATLAB*

*Model Physics: Nonlinear Diffusion in a Porous Medium, Earthquake Nucleation*

- **Light Emitting Electrochemical Cell –Semiconductor Junction Formation Simulation: 7/2013 – 9/2014**

Quantum and solid-state behaviour of the LEEC devices I had produced as part of a £3m funded project, as well as bespoke laboratory software for measurement of quantum efficiency.

Position: Research Scientist, Polyphotonix Ltd.; *Language: MATLAB, C*

*Model Physics: Drift-Diffusion, Semiconductor Junction Formation, Electrochemistry*

- **Terahertz Schottky Diode Electromagnetic Heating and Dissipation Simulation: 1/2013 – 3/2013**

An evaluation of the cooling ability of heat sink designs on simulated electromagnetic heating for devices operating in the Terahertz frequency.

Physics Undergraduate Group Project: Teratech Components & Oxford University,

Position: Physics Student, Oxford University, Platform: COMSOL

*Model Physics: Electromagnetic Heating, Terahertz Frequency, Heat Diffusion*

## Technology Projects

- **Technical integration of Radar into a Small UAV Defence System: 6/2016**

Delivered a feasibility study to XMi Holdings for a United States Department of Defence, SBIR Direct-to-Phase II proposal.

Position: Science and Technology Consultant (Part-time alongside PhD)

Features: Radar, Feasibility study, Military Application.

## Patents, Publications and Talks

- **Method of manufacturing precursor material for forming light emitting region of electroluminescent device WO 2013057489 A1**
- **Medical apparatus, system and method WO 2014118571 A1**
- **Apparatus for emitting light and method of manufacture WO 2014041333 A1**
- **Medical Apparatus and Method WO2013124615 A1 (Pending)**
- **Modelling fluid flow in complex natural fault zones: implications for natural and human-induced earthquake nucleation.** (Submitted to Earth and Planetary Science Letters)
- **Modelling Fluid Overpressure Driven Faulting and Seismicity within Low Porosity Seal and Tight Reservoir Rocks** (Invited Presentation, NERC Oil and Gas CDT Annual Conference: Both 2016 & 2017)
- **The Impact of Fault Zone Architecture in Modelling the Fluid Overpressure Driven Faulting and Seismicity of the Colfiorito Seismic Sequence** (Poster, Tectonics Study Group 2015)
- **Modelling fluid flow in complex natural fault zones: implications for natural and human-induced earthquake nucleation** (Talk, EGU 2018, First Author, Presented by Third Author)
- **Learn Machine Learning in 3 Hours** (Video Course, Packt Publishing, Commissioned Author)