Alec Barber M.A.I. Sch.

ELECTRONIC AND COMPUTER ENGINEERING SCHOLAR, MASTERS STUDENT AND EDUCATOR

Education

TRINITY COLLEGE, UNIVERSITY OF DUBLIN

Scholar and Masters Student | 2015 - 2020

- Master of Electronic and Computer Engineering (MAI) with emphasis on Bayesian statistics, machine learning and signal processing
- Member of Dublin University Boat Club and Computer Science Society
- Undergraduate grade of 78% (first class honours)

SLIGO GRAMMAR SCHOOL

Prefect & Kayak Club Captain | 2008 - 2015

- Principle's award for placing highest in the Leaving Certificate
- Active member of A.V., debating and kayak clubs
- Co-founder of school coding club and cycling clubs

Experience

TELECOMMUNICATIONS RESEARCH

CONNECT Research Centre | 2018 - 2019

Summer 2018, I worked with CONNECT as a summer intern, adapting an existing framework for the NS-3 network simulator to model and analyse features of the WLAN IEEE 802.11ad standard, making contributions to the development of the module. I had the opportunity to present my findings during an academic retreat in Waterford to a large group of academics. Opted to continue my work through 4th year of college, eventually incorporating my work into my dissertation.

LEAD EDUCATOR AND CO-COURSE CREATOR

Trinity Walton Club | 2019 - Present

Designed and delivered a course on telecommunications for a group of transition year students. The course involves teaching the fundamentals of Python socket programming and creating an instant messaging program along with exploring engineering approaches to problem solving. My role also includes the organisation of a small team of educators, organising meetings and delegating tasks.

ATTENDANT / WAITER

Azur et Niege, Montclar France | 2016

Worked for a summer in a small village de vacances in the French Alps. My roles involved helping predominantly French guests with any problems they may have had along with waitering duties at meal times.

Profile

Motivated and disciplined engineer with keen interest and aptitude in machine learning and Bayesian probability. Raised in a rural farming setting, I am familiar with the importance of perseverance and hard work. I have a diverse range of personal interests spanning History, Economics and Philosophy.

Contact Details

Carrownleam, Coolaney, Co. Sligo

barberal@tcd.ie

github.com/BarberAlec

linkedin.com/in/alec-barber/

+353 87 7463172

Technical Skills

- Knowledgeable in IEEE WLAN protocols
- Proficient in Linux and Windows systems
- Bayesian inferential methods
- Well versed in machine learning libraries Scikit-Learn and Keras
- Highly competent maths ability

Auxiliary Skills

- Intermediate French
- Level 3 kayaking
- Full Irish drivers license
- Level 1 lifeguard training

Programming Languages

Primary	Secondary
- Python	- C#
- C++	- Verilog
- C	- Arduino
- Matlab	- ARM + x64

Modules of Note

Module	Grade
- Deep Learning and it's Applications	I:I
- Machine Learning	I:I
- Information and Communication Theory	I:I
- Signals and Systems	I:I
- Digital Signal Processing	I:I
- Statistical Signal Processing	I:I
- Probability and Statistics	I:I
- Numerical Methods	I:I

Referees

Prof. Anthony Quinn
Associate professor in statistical signal processing at Trinity College Dublin.

aquinn@tcd.ie

Prof. Nicola Marchetti
Associate professor in wireless communications at Trinity College Dublin.

marchetn@tcd.ie ☎ +353 1896 4898

Dr. Jacek Kibilda
Research fellow, CONNECT Centre at Trinity College Dublin.

kibildaj@tcd.ie

Projects and Research

BAYESIAN TRANSFER LEARNING | 2019-2020

Research project investigating Bayesian transfer learning in a multiple inference-node setting where the complete model is not presumed or designed. This is achieved via two object transfer methods and the adoption of Fully Probabilistic Design princples.

OTHELLO GAME PLAYING A.I. SURVEY | 2020

As part of a module on Artificial Intelligence, I led a semester long team project on a comprehensive evaluation of game playing AI for the game Othello. Results showed relative performance of the methods along with somewhat surprising ineffectiveness of Neural Networks.

CSGO LOCATION PREDICTOR A.I. | 2019

Constructed a prediction model for the first person shooter game CS:GO to estimate enemy location given limited knowledge of the game state. Due to difficulty in parsing game replay files and the lack of any public dataset, to the best of my knowledge, this has never been attempted before.

ARM ASSEMBLY INTERPRETER | 2018

Took the initiative while learning ARM assembly to build my own interpreter for the ARM7tdmi instruction set in C++, with a focus on developing a more intuitive debugger and modern user interface.

Other Achievements and Interests

ELECTED AS ACADEMIC SCHOLAR

Elected a Scholar of Engineering after obtaining a first class honours in a set of annual searching exams. These exams were designed to identify students who can consistently demonstrate exceptional knowledge and understanding of their subject. The benefits include the waiving of tuition fees, free campus accommodation, a daily 3 course meal (Commons), a yearly stipend along with access to a plethora of college events. In my Masters year, I represented my college in an academic exchange with Oriel College Oxford.

LEVEL 3 KAYAKING SKILLS

Trained bi or tri-weekly for six years of secondary school in both freestyle and distance kayaking. I was awarded my level 3 kayaking skills certificate in recognition of my abilities. Further from this, I won multiple medals when competing in the Liffey Descent in Dublin. I also utilised my skills working with a kayaking centre as a junior instructor.

ROWING

For my freshman year of college, I stroked a novice 8 and helped lead the crew to unexpected success at multiple events. I continued to row smaller boats and contribute to the club for a number of years.