

# Patrick Schrempf

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## EXPERIENCE

### **Laidlaw Internship in Leadership and Research, University of St Andrews**

JUNE 2017 - AUGUST 2017 (10 weeks)

A scholarship awarded to 50 applicants in their penultimate year from all faculties across the university to work on a 10 week, self led research project. The topic of my research project was “Explainable Artificial Intelligence” - in particular attempting to explain the machine learning techniques used in RadarCat (see publications below). The result of the project was an interactive visualisation of the random forest classifier that can be combined with an already existing interface. Additionally, the scholarship involved various workshops and seminars that aimed to increase confidence in leadership and presentation skills. These workshops were affiliated with the Institute of Leadership and Management (ILM) and resulted in the award of an official ILM certificate.

### **J. P. Morgan, Glasgow — *Summer Technology Analyst***

JUNE 2016 - AUGUST 2016 (10 weeks)

Working on and improving the performance of a strategic internal application by implementing database caching. The application was built using the Spring framework in Java and relied on a variety of Application Programming Interfaces. I led the project with the support of four other software developers and business analysts. The outcome was a significantly faster loading time of the application in Europe and Asia.

### **Google ATAP Project Soli, University of St Andrews — *Soli Alpha Developer***

JANUARY 2016 - JULY 2016 (7 months)

This internship involved researching and developing a novel application as part of the St Andrews Computer Human Interaction Group (SACHI). It started as a four week internship working alongside a PhD student and experimenting with the new Google Soli radar sensor. During these four weeks I linked the radar input to a machine learning library and experimented with different models of machine learning. I helped run experiments to explore what objects our system could classify using the radar signal. After these four weeks, further experiments and research resulted in a publication (“RadarCat: Radar Categorization for Input & Interaction”). Furthermore, we were one of ten groups out of fifty to be selected to present our work at Google in California.

## **School of Medicine, University of St Andrews — *Research Assistant***

FEBRUARY 2016 - JUNE 2016 (*5 months*)

As part of a larger research project looking at the effect of genes on handedness and laterality, the School of Medicine started a project to digitalise the simple pegboard test. This test involves moving pegs from a row of small holes at the top of a board to a row of holes at the bottom of a board. Another undergraduate student and I developed the digital version of the test. In addition to the Android application that was developed, we had to create the hardware by 3D-printing conductive pegs and laser cutting custom frames. The digital pegboard test is now being tested in various research centres around the world.

## **Austria Press Agency - IT, Vienna — *Web development intern***

JULY 2015 - AUGUST 2015 (*2 months*)

During this internship, I independently developed a WordPress plugin for internal use within the Austrian Press Agency. This plugin automatically suggests annotations while reporters are editing their articles within Wordpress. The annotation system already existed, however this project integrated it into a plugin that is easy to use for all employees. During this project, I developed new skills in PHP and JavaScript in order to fulfil the requirements.

## **Austrian Red Cross, Vienna — *Paramedic***

DECEMBER 2013 - AUGUST 2014 (*9 months*)

As part of the Austrian compulsory community service, I worked as a paramedic for the Austrian Red Cross for 9 months. This included a month of paramedic training and eight months of working in an ambulance. In the ambulance, I was responsible for patient wellbeing and communication with hospitals in emergencies.

## **EDUCATION**

*EngD Computer Science*

**University of St Andrews, Scotland & Canon Medical Research Europe, Edinburgh**

SEPTEMBER 2018 - PRESENT

Project title: "Efficient strategies for training deep neural networks"

*BSc Computer Science (First class)*

**University of St Andrews, Scotland**

SEPTEMBER 2014 - JUNE 2018

During the first three years, I developed in Java, C, Python, JavaScript and Haskell. Some of my favourite modules include Data Encoding, Computational Complexity, Databases and Operating

Systems. Currently, I am working on my dissertation on “Deep Learning for Cancer Segmentation” which has proven to be highly interesting.

## **AHS Theodor-Kramer Straße (Grammar School), Vienna — *Austrian Matura***

SEPTEMBER 2006 - JUNE 2013

**Average Grade:** 1.0 (Mathematics, Physics, English and German)

## **PUBLICATIONS**

### **RadarCat: Radar Categorization for Input & Interaction**

Proceedings of the 29th Annual ACM Symposium on User Interface Software & Technology (UIST '16)

In RadarCat we present a small, versatile radar-based system for material and object classification which enables new forms of everyday proximate interaction with digital devices. We demonstrate that we can train and classify different types of materials and objects which we can then recognize in real time. We further demonstrate four working examples including a physical object dictionary, painting and photo editing application, body shortcuts and automatic refill based on RadarCat.

I am named on a patent that covers the intellectual property of this novel application.

## **AWARDS**

### **John Honey Book Prize**

2016/17, University of St Andrews

The John Honey Book Prize is awarded to the best student in the Junior Honours class in Computer Science every year. The award is based on the grade average across all modules taken during the academic year (18.1 average).

### **Deans' List**

2014/15, 2015/16, 2016/17 & 2017/18, University of St Andrews

The Deans' List is an annual award for academic excellence promoted by the Deans of the University. This award rewards the excellence and ambition of the very highest achievers who achieve a first class average.

## **INTERESTS**

### **St Andrews Computing Society**

*Executive Committee, 2015/16 & 2016/17*

During my time on the executive committee for STACS (St Andrews Computing Society), I helped organise three hackathons with 100+ participating students. My main roles during organisation of the events was to contact sponsors in order to make the events free to all participating students. As well as these larger events, we (the committee) hosted a variety of other smaller talks and workshops throughout the year.

### **University of St Andrews Triathlon Club**

*Club president, 2017/18*

As club president, I am in charge of the club and the committee. This role mainly involves liaising with the Athletic Union of the University, our triathlon coach and with the national governing body Triathlon Scotland. In addition, I oversee and help with the race organisation of our two annual races - an Autumn Duathlon and a Spring Triathlon. These races attract around 100 local competitors from Fife and other universities in Scotland.

### **University of St Andrews Charities Campaign - Race2**

*IT representative, 2017/18*

As the IT representative, I am in charge of the tracking software and website for the Charities Campaign's "Race2" event. This event is a hitchhike starting in St Andrews and ending in a different European city every year. With 50 teams of two to three participants, it is very important to have reliable software that enables simple tracking of the teams in order to ensure their safety. In addition, the website provides a platform for sharing each team's success and raising money. The successful running of the website enabled the campaign to raise over £30,000 for charity.