PETER CARRAGHER

SELF DRIVEN
PhD STUDENT @CMU &
EX-FB SOFTWARE ENGINEER

CONTACT

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TECHNICAL SKILLS

- **OOP paradigm:** C++, Python, Java
- **Functional paradigm:** Haskell, Scala
- **Full stack:** PHP, JS, React, NodeJS
- **Database systems:** SQL, Spark, Hive, Presto, graph DBs (neo4j)
- **ML pipelines:** pytorch, tensorflow, keras, AWS sagemaker, IBM Watson
- **Compilers:** LLVM, SYCL, GHC (Haskell)
- **Heterogenous computing:** OpenCL, CUDA, GPUs, FPGAs, profilers
- **Graphics development:** OpenGL, Vulkan, Unity, libgdx, Allegro
- **Systems knowledge:** C, Bash, Perl, linux kernel, networking protocols, security
- **Build systems:** CMake, make, SCons, Buck, Visual studio

PROFILE

Motivated CS PhD student at CMU with a MSc in Computer Science & **over 4 years industry experience**. Interested in computational social science, network science, disinformation, information retrieval, argument mining, behavioral modelling.

EXPERIENCE

FACEBOOK

SWE Full-time, ML Generalist: Jan 2020 - Current

Bad actors impersonate vulnerable accounts in order to scam large groups of users. I designed, built & launched ML detection and enforcement systems that stop these accounts. My work reduced prevalence of private impersonation (family, friends) by 25%, and the visibility of high-profile impersonation (politicians, public figures) by 66%.

SWE Full-time, Systems Generalist: Oct 2018 – Jan 2020

Facebook pays 10s of 1000s of reviewers to takedown harmful content manually. I designed, built & launched a series of machine learning models and product experiences to automate this process. This work saves the company ~$10 million/year and 5k hours/week of manual review workload.

Facebook suffers from coordinated attacks on democratic elections around the world. I built response systems for use by the internal Civic Integrity team and external human rights watch escalations to prevent coordinated inauthentic attack on elections and I monitored their use through the Indian & EU elections in 2019.

SWE Intern x 2, Summer 2017 & 2018

As part of the Augmented Reality (AR) team, I added a SVG renderer to the graphics engine and launched this feature for the Spark-AR platform.
In my 2nd internship I wrote a documentation generator for the engines scripting interface. This had to produce and publish inter-linked documentation for publicly released features.

CODEPLAY

SWE Intern x 2, Summer 2015 & 2016

As part of the LPGPU2 research project, another intern and I created a cross platform GPU profiling tool for SYCL kernels based upon AMD's open source CodeXL. This work has since been open sourced, featured in IWOCL and publicised by Kronos & LPGPU2 research groups:

SWE Part-time, Sep 2015 – May 2016

Created a cross platform graphics engine for compute intensive demos illustrating the power of SYCL and OpenCL. Implemented GPU accelerated n-body, ray tracer and FFT based simulations using this graphics engine & SYCL in C++.

ACHIEVEMENTS

- Rank #1 leaving certificate result in Thurles, 2014
- Science Student of The Year, Thurles C.B.S, 2014
- Rank #9 among Irish high school students for math ability, PRISM competition, 2013
- National Olympiad participant in Chemistry & Physics
- Thurles C.B.S. debate team captain, 2011-2014
- Participated in Irish & German debating competitions
- Grade 8 Piano and Music Theory, ABRSM, 2013
- Regional Gold medallist in u16 Piano Solo and duet

INTERESTS

- Rock climbing & mountaineering
- Playing piano at the train station
- Avid football & lifelong Arsenal fan
- Hobbyist video game dev
- Singing in the shower
- Losing at chess
- Reading Sci-Fi
- Writing Sci-Fi
- *Anything* Sci-Fi

EDUCATION

CARNEGIE MELLON UNIVERSITY

PhD in Societal Computing 2022-current

My research in the disinformation space with the CASOS group is at the intersection of social media, information retrieval & behavioral modelling.

GEORGIA INSTITUTE OF TECHNOLOGY

MSc in Computer Science 2020-22 **3.7 GPA**

With a specialisation in Interactive Intelligence, I have focused on ML, knowledge-based AI, educational technology and cognitive science. As part of the Design & Intelligence lab, led by Prof. Ashok Goel, I have contributed to the Jill Watson KBQA agent and introduced it as an educational intervention to enable learning at scale within several OMSCS courses.

UNIVERSITY OF EDINBURGH (UoE)

BSc in Computer Science 2014-18 **4.0 GPA**

Gained invaluable research skills and experience in a range of diverse fields, from machine learning, AI & robotics to networking, compilers, system architectures & quantum computing. My thesis extended compilers for heterogenous architectures to map DNN & CNN primitives to FPGA fabric.

THURLES C.B.S (2008-14)

Leaving Cert (A-Levels) Junior Certificate (GCSE)

6 A1's: All Higher Level **10 A's**: All Higher Level

EXTRA-CURRICULAR

UoE Mountaineering club Webmaster, 2015 – 2018
Created and maintained a new site using Wordpress.

Codeplay Student Representative, 2016
Codeplay mentored and judge at MLH hackathons, engaging students with novel compilers for esoteric languages.

UoE Computer society Hackathon Secretary, 2015 - 2016
Organised & ran the Smart Data Hack & MLH Hack the Burgh

1st place, UoE IGEM Biohack, 2015
Built a dating app to analyse the genetic distribution of couples.

2nd place, Manchester University's MLH Studenthack, 2015
Built an android app for elite climbers to monitor and improve their climbing technique using Thalmic 'Myo' armbands.

1st place, Scotland's Environmental Ecohack, 2014
Built FoodMiles, a grocery assistant that uses barcodes to tally the total miles your food has travelled to get to your basket.

REFERENCES

Prof. Kathleen Carley
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Prof. Ashok Goel
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