

# Dr. Gergely Ferenczi

gergely.p.ferenczi@gmail.com  
gpf89.github.io/portfolio  
1/2, 341 Dumbarton Road  
G11 6AL, Glasgow, UK  
+44 7964 594004

## PROFILE

I have 2.5 years experience as a Virtual Reality developer working with C# and Unity, including shader work, and with Python. I have a PhD in Quantum Optics and a further 6 year career as a researcher in quantum, classical and electron imaging. My academic coding experience includes computational imaging in Python, ray-tracer development in Java and data analysis in MATLAB. I have a generalist mindset and am comfortable with switching fields.

I am looking for my next programming role in the VR, games or tech industries to utilise both my professional and academic experience .

## EMPLOYMENT HISTORY

<b>Programmer</b> 2022 Oct. - 2025 Mar.	<b>MXT</b> (PGM-1) <ul style="list-style-type: none"><li>Shipped a mixed reality driving simulator with networked traffic that has been used in three driver response studies by WSP and ARUP.</li><li>Improved the behaviour of the traffic simulation by having taken on the role of team specialist in the traffic simulation tool SUMO.</li><li>Improved the representation of traffic both in statistical variation of it's various aspects and its visual representation including shader work and performant interpolation of vehicle kinematics.</li><li>Debugged traffic behaviour &amp; in-house editor tool functionality with the use of automated test scenes, scripted application of third party tools and unit tests.</li><li>Helped develop Unity tooling in our Road Editor for editing &amp; exporting the road network and generating traffic for the simulation. Contributed to collaborative design of new tool.</li><li>Performed prospective research exploring new tools in service of exploring potential services to meet client needs.</li></ul>
<b>Post-Doctoral Research Associate</b> 2021 Dec. - 2022 Jun.	<b>Imaging Concepts Group, University of Glasgow</b> (PD-6) <ul style="list-style-type: none"><li>Investigated computational means of undoing artefacts, due to sample motion during scanning, in the light-sheet microscope.</li><li>Developed code in Python to undo these artefacts based on an iterated process of de- and reconvolutions.</li></ul>
<b>Post-Doctoral Research Associate</b> 2021 May - 2021 Aug.	<b>Optics Group, University of Glasgow</b> (PD-5) <ul style="list-style-type: none"><li>Investigated the origins of experimentally observed asymmetry in Hong-Ou-Mandel dip shapes.</li></ul>
<b>Post-Doctoral Research Associate</b> 2018 Apr. - 2021 Mar.	<b>Semiconductor Spectroscopy and Devices Group, University of Strathclyde</b> (PD-4) <ul style="list-style-type: none"><li>Analysed of electron backscatter diffraction image maps of semiconductor substrates using MATLAB and MTEX.</li><li>Focused on characterising samples in particular determining variation in crystal growth orientations of substrates.</li></ul>
<b>Post-Doctoral Research Associate</b> 2017 Dec. - 2018 Mar.	<b>Quantum Theory Group, University of Glasgow</b> (PD-3) <ul style="list-style-type: none"><li>Studied the statistical properties of photon-added and photon-subtracted states using moment generating functions.</li></ul>
<b>Post-Doctoral Research Associate</b> 2017 Aug. - 2017 Nov.	<b>Optics Group, University of Glasgow</b> (PD-2) <ul style="list-style-type: none"><li>Worked on the ray tracer DrTIM (The Interactive Metatoy), written in Java.</li><li>Implemented Fresnel lenses for the purposes of simulating transformation optics devices.</li></ul>
<b>Post-Doctoral Research Associate</b> 2016 Aug. - 2016 Dec.	<b>Quantum Theory Group, University of Glasgow</b> (PD-1) <ul style="list-style-type: none"><li>Developed, using analytic methods, a novel tomography protocol for the transverse spatial profile of a particle, exploiting two-particle interference.</li></ul>

## EDUCATION

<b>PhD</b> 2012 - 2016	<b>Quantum Theory Group, University of Glasgow</b> <b>Quantum Optics</b> <i>Which-path problem for one and two particles with two degrees of freedom and a relation between transverse spatial structure and group velocity of light</i> Supervisor: Prof. Stephen Barnett	(ED-2)
<b>MSci</b> 2007 - 2012	<b>Imperial College London</b> <b>Physics with Theoretical Physics (First-Class Honours)</b> <i>Applications of singular Sturm-Liouville eigenvalue problems in quantum mechanics</i> Supervisor: Prof. Yang Chen	(ED-I)

## PORTFOLIO & PUBLICATIONS

Available online at [gpf89.github.io/portfolio](https://gpf89.github.io/portfolio)

## TEACHING & SUPERVISION

2018 - 2020	<b>University of Strathclyde</b> Co-supervision (with Dr. Carol Trager-Cowan and Dr. Jochen Bruckbauer) of undergraduate project student 2019-2020 (PD-4). Co-supervision (with Prof. John Jeffers) of undergraduate project student 2019-2020 (PD-4). 1st year laboratory demonstrator 2018-2019 & 2019-2020 (PD-4).
2014-2015	<b>University of Glasgow</b> 1st year laboratory demonstrator 2014-2015 (ED-2).

## SKILLS

### Tech & Science

#### Organisational

Git, GitLab/GitHub, Jira - version control for individual and collaborative projects

#### Languages and engines

C#, Unity, - game development including some experience with Shader Graph and the Jobs system

Python - game development, scripted use of third part tools for analysis, image manipulation

SUMO - traffic simulation

C++, Unreal, Java - some experience in game tool and ray-tracer development

MATLAB, MTEX, Mathematica - scripted analysis of data and mathematical modelling

L<sup>A</sup>T<sub>E</sub>X, CSS - CV and portfolio design

### Arts

Blender, PowerPoint, compass & straight edge methods, free-hand illustration - scientific illustration for talks and publications @gferenczi.science

ffmpeg, DaVinci Resolve - limited video & audio editing for music recordings

Ableton Live - music recording & signal processing

#### Other

Much of my free-time is spent on near completely autodidactic pursuits of art & music: @gferenczi.art, @gferenczi.music

Designed the Quantum Theory Group's logo which is still in use since 2013.