

Chas Nelson

PhD, MSci

Current Position

2019–current **Lord Kelvin Adam Smith Data Science Research Fellow**, *University of Glasgow*, Glasgow, UK.
The opportunity to establish an independent research career focussing on the development of smart microscopy tools and data analysis pipelines for exploring the development of neural computations.

Employment

2018–2019 **EPSRC Doctoral Prize Research Fellow**, *University of Glasgow*, Glasgow, UK.
Simulating the optics and light response of the zebrafish retina to evaluate the possibility of combining light sheet microscopy and graph theoretics to interrogate zebrafish retinal development.

2017–2018 **Research Assistant in Microscopy and Optics**, *University of Glasgow*, Glasgow, UK.
Combining real-time image processing with low phototoxicity microscopy to capture synchronised 3D images of the *in vivo*, beating zebrafish heart.

Education

2013–2017 **PhD in Computer Science**, *Durham University*, Durham, UK.
Thesis: Mathematical Morphology for Quantification in Biological & Medical Image Analysis

2009–2013 **Master of Science**, *Durham University*, Durham, UK, *First Class Honours*.
Biology & Physics within the Natural Sciences Programme

PhD Thesis

Title *Mathematical Morphology for Quantification in Biological & Medical Image Analysis*
Supervisor Dr Boguslaw Obara
Description

- o Developing, validating & disseminating image analysis & processing solutions
- o Vessel enhancement based on morphological operations
- o Automated and accurate nuclei detection in fluorescent micrographs
- o Brain vasculature segmentation and aneurysm highlighting in MRA images

Masters Thesis

Title *The Scratch Wound Assay: Scratching Away at Cancer with Image Analysis*
Supervisor Prof. Chris Hutchison
Description

- o Developed a scratch wound assay analysis solution capable of tracking individual cells & of analysing wound area

Experiences

Research-related

2020–current **Consultant Data Scientist**, Fjelltopp, UK.

- o Supported Fjelltopp in delivering WHO public health projects
- o Helped analysis and visualise data for a WHO project on emergency services in Ukraine. Focussed on developing a series of interactive maps supporting the exploration of data themes at a regional level

- 2018–2019 **Undergraduate Supervisor**, *School of Physics and Astronomy*, University of Glasgow, UK.
- Designed and supervised the undergraduate research projects of three students
 - Guided students through theory, experimental design, programming, research and reporting
 - Provided pastoral support for getting summer internships and applying for further study and jobs
- 2018–2019 **Vacation Scholarship Supervisor**, *School of Physics and Astronomy*, University of Glasgow, UK.
- Awarded EPSRC and local funding for four undergraduate students to complete research projects
 - Designed coherent research programmes for the students and supervised them throughout the project
 - Guided students through complex theory, experimental design, data analysis and presenting skills
- 2017 **Conference Organiser**, *Glasgow Imaging Network*, University Glasgow, UK.
- Organised a one-day conference to bring together life scientists, physicists and engineers working on the development or use of imaging technologies
 - The conference was a great success with 23% of attendees establishing new collaborations
- 2016–2017 **Founding Director**, *Intogral Ltd.*, UK.
- Helped set-up a new company focussed on innovative and intelligent image analysis solutions
 - Developed a Innovate UK bids for early funding
 - Dealt with legal and financial aspects of setting up and running a small start up
- 2016–2017 **Undergraduate Supervisor**, *School of Engineering & Computing Sciences*, Durham, UK.
- Designed and supervised the undergraduate research projects of three students
 - The report of one of Frank Ryan was highly commended in the 2016 Undergraduate Awards
 - Guided students through theory, experimental design, programming, research and reporting
 - Provided pastoral support for getting summer internships and applying for further study and jobs
- 2015–2017 **Founder Journal Club**, *School of Engineering & Computing Sciences*, Durham University, UK.
- Founded the Vision Journal Club to help postgraduates develop their critical analysis skills
 - The club focuses on image processing, computer vision & visualisation papers
 - Chaired the club, organising papers & leading discussions
- 2015–2017 **Junior Seminars Chair**, *School of Engineering & Computing Sciences*, Durham University, UK.
- Chaired the Computer Science Junior Seminar series of lectures
 - Invited speakers & organised sessions across a range of areas of interest

Teaching

- 2019 **Bioimage analysis with Python**, (*IAFIG*) *Royal Microscopical Society*, London, UK.
- Part of the organising and teaching team for a week long course on bioimage analysis
 - Taught on the basics of image processing, manipulating images with Python and integrating Python and FIJI into one pipeline
- 2019 **Programming for Biologists**, *Royal Society of Biology*, London, UK.
- Developed a one day, intensive, zero-to-hero Python course for biologists
 - Including in-course and after-course teaching materials and on-line support videos
- 2018–2019 **Python Computing Course**, *School of Physics and Astronomy*, University of Glasgow, UK.
- Developed a new Python programming course for the level 2 Physics undergraduate module
 - Designed new teaching materials within the Jupyter Notebooks framework
- 2017–2018 **Polarisation Practical Lab Design**, *School of Physics and Astronomy*, University of Glasgow, UK.
- Developed a new lab for the level 2 physics undergraduate module
 - Whilst the practical focused on experimenting with polarisation it was developed with the development of key skills as a focus
- 2017–2019 **Frontiers in Physics Lectures**, *School of Physics and Astronomy*, University of Glasgow, UK.
- Lectured on Imaging the Developing Zebrafish Heart as part of level 1 undergraduate physics course.
- 2016–2017 **Bioimage Analysis Lectures**, *School of Biological & Biomedical Sciences*, Durham University, UK.
- Lectured on Bioimage Analysis as part of level 3/4 undergraduate course *Biological Imaging*
 - Developed digital imaging & image analysis curriculum & content for multidisciplinary cohort
- 2015–2017 **Postgraduate CPD Series**, *School of Engineering & Computing Sciences*, Durham University, UK.
- Developed a curriculum of CPD topics, e.g. delivering a conference talk, for the PhD cohort
 - Delivered a seminar on the wide range of visualisation a plotting tools available to students

Policy

- 2018 **Transparency of Evidence**, *Sense about Science*, UK.
- o A Spot Check of Government Policy Proposals July 2016 to July 2017
 - o The spotcheck scored “94 government policies [on] how transparent [was] the evidence behind the policy.”
 - o Contributed as a policy scorer of government policies
- 2018 **Member of Policy Sub-Committee**, *Royal Society of Biology in Scotland*, Scotland, UK.
- o Actively involved in the policy work of the RSB in Scotland
 - o Contributed to and edited collated responses to calls for evidence
 - o Involved in developing a database of routes into life science careers in Scotland
- 2016 **Strategy & Policy Intern**, *BBSRC*, Swindon, UK.
- o Part of the Exploiting New Ways of Working science strategy group
 - o Contributed to the BBSRC UK-wide direction & strategy for bioimaging and related technologies
 - o Produced the public BBSRC Review of Bioimaging report
 - o Developed quantitative & qualitative data analysis along with exciting visualisations
 - o Delivered findings at high-profile meetings, e.g. with members of BIS, the UK governmental department in charge of science research funding
- 2012 **MURN Researcher**, *Matariki Undergraduate Research Network*, Durham, UK.
- o Established a global research plan into interdisciplinary science in teaching & research
 - o Produced an internal report for Durham University that has since been used for internal strategy
 - o Collaborated with a global team including researchers from Australia and New Zealand
 - o Undertook training in qualitative research & education research

Outreach

- 2019 **Presenter**, *Explorathon 2019*, Glasgow, UK, Seeing the Invisible.
- 2019 **Presenter**, *Glasgow Science Festival — Science Sunday*, Glasgow, UK, Using the Rainbow- Imaging with Colours of Light.
- 2019 **Speaker**, *Pint of Science*, Glasgow, UK, Imaging the Zebrafish Heart Without Breaking It.
- 2019 **Speaker**, *7 Minutes of Science*, Glasgow, UK, Imaging the Beating Zebrafish Heart.
- 2019 **Speaker**, *Café Scientifique Cockermouth*, Cockermouth, UK, Revolutions in Light Microscopy.
- 2019 **Speaker**, *University of the Third Age*, Glasgow, UK, Revolutions in Modern Light Microscopy.
- 2018 **Speaker**, *Café Scientifique Glasgow*, Glasgow, UK, Revolutions in Light Microscopy.
- 2018 **Speaker**, *Institute of Physics Scotland Public Lecture Series*, Glasgow, UK, Imaging the Developing Heart: Combining Computing and Optics to Image and Quantify a Highly Dynamic System.
- 2013 **Co-Founder**, *Durham City Café Scientifique*, Durham, UK.

Other Experiences and Responsibilities

- 2017–current **Mental Health Awareness Events**, *College of Science & Engineering*, University of Glasgow, UK.
- o Organised college-wide Stress and Resilience panel event for University Mental Health Day 2020
 - o Organised school-wide events for Time to Talk Day 2020 including a poster campaign and coffee morning
 - o Organised school-wide events for Mental Health Awareness Week 2019 including a poster campaign, coffee morning, Glasgow Women in Physics-joint event and a picnic
 - o Organised school-wide events for World Mental Health Day 2018 including a coffee morning and mental health colloquium
 - o Organised college-wide events for Mental Health Awareness Week 2018 including a poster campaign, coffee morning and a panel discussion from Mental Health First Aiders
- 2017–current **Council Member**, *Royal Society for Biology in Scotland*, Scotland, UK.
- o Elected Ordinary Member of the RSB in Scotland Council (charity no. 277981)
 - o Part of the Policy Committee
 - o Involved in a variety of Scotland and UK-wide policy and outreach activities
- 2015–2017 **Trustee**, *Ustinov College Graduate Common Room*, Durham, UK.
- o Trustee of a registered charitable body (no. 1164865)
 - o Part of Durham’s historic listed collegiate system
 - o Ensured charity carried out its purpose for the benefit of the college members
 - o Complied with charity law and The Charity Commission
 - o Ensured accountability of the charity and its executive board

Awards, Grants & Honours




- 2019–current Lord Kelvin Adam Smith Research Fellowship in Data Science
 - Covers full salary and £10,000 research funds per year
- 2019 Royal Microscopical Society Travel Grant (£300)
- 2019 Royal Society of Biology Outreach and Engagement Grant (£500)
- 2018–2019 EPSRC Doctoral Prize Research Fellowship
 - Covers full salary
- 2018 Glasgow Imaging Network 1st Prize Poster Award (Nikon DSLR Camera)
- 2018 Institute of Physics Early Career Researchers Fund (£300)
- 2018 Honor Fell/Company of Biologists Travel Award (£500)
- 2018 EPSRC Vacation Scholarship (£2,300)
 - Awarded funds to support an undergraduate student during a ten week summer project
- 2016 Wolfson Research Institute Small Grants Award (£2,000)
- 2015 1st prize Images of Technology @ Durham 2015
- 2014–2017 Biophysical Sciences Institute Junior Fellowship
 - Awarded to researchers with significant experience in interdisciplinary life science research
- 2013 EPSRC PhD Studentship (3.5 years; £19,126 *per annum*)
- 2013 Institute for Advanced Computing Research Grant (£2,000)
- 2013 Honor Fell/Company of Biologists Travel Award
 - Full registration and accommodation costs at the BSCB-BSDB Joint Spring Meeting 2013
- 2012 Matariki Undergraduate Research Network Research Grant (£2,000)

Publications

Professional Bodies

- 2018–current Member of the Sense about Science Voice of Young Science Network
- 2016–current Member of the Royal Society of Biology, MRSB
 - Elected Ordinary Member of the RSB in Scotland Council
- 2016–current Member of the Royal Microscopical Society, MRMS
- 2016–current Associate Fellow of the Higher Education Academy

Online Presence

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chasnelson.co.uk/thelittleeye | <ul style="list-style-type: none">  @ChasNelson1990  ChasNelson1990 ORCID 0000-0002-4114-1710 |
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