Tania R. **Allard**

Research Software Engineer · Developer Advocate - Research/OSS

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A passionate innovator with experience in bringing new technology to bear on complex challenges. Experienced community builder and open source advocate. Strong communication skills and able to present abstract concepts in an accessible way to all organisational levels and diverse stakeholders . Experienced technical lead for distributed teams.

Education

The University of Manchester

Manchester, UK

PhD in Materials science / computational modelling

Jan 2013 - Dec 2016

Thesis: Modelling and characterisation of compliant and hydrated materials. Supervised by Prof. Brian Derby

- Developed algorithms and data analysis pipelines to model the behaviour of biological tissues in Python and R. Such algorithms reduced the computational time by 70% as well as the associated errors by 30% compared to state of the art.
- Developed a sophisticated data acquisition and preservation strategy for real-life data sets between 2 and 25GB size. These were posteriorly analysed using complex data analysis pipelines and classification algorithms in Python and R (NumPy, pandas, scikit-learn, tidyverse).
- Interpreted complex simulation data using statistical methods implemented in R.
- Worked in a cross-disciplinary team to develop a unique multi-scale simulation technique and implemented the methodology to explain complex biological phenomena using own generated computational scripts and packages written in Python, FORTRAN, MATLAB and C++.

UNAM

Mexico City, Mexico

BEng in Mechatronics engineering

Aug 2016 - May 2011

Topics covered include: multivariate calculus, statistics, linear algebra, robotics, automation and control, design, mechanics of solids, fluids mechanics, electronics. Major: computational modelling and medical devices

Relevant Experience

Microsoft

Manchester, UK

Sr. Developer Advocate

March 2019-present

- Technical lead for the Academic developer advocacy team. Overseeing multiple projects simultaneously and leading teams of developer advocates, engineers and project managers.
- Defined strategies to better serve and collaborate with the scientific community. Since before joining the team, there was no formal engagement with the Research software engineering or scientific computing community. These strategies have lead to the development of research, specific content and documentation. Research partnerships, and deeper collaboration in open data and open science projects.
- Co-developed the Python advocacy strategy focusing on the Education, Scientific Computing and Data Science groups/community.
- Project planning and resources allocations for scientific computing and major research projects within Microsoft and with global universities, libraries, and research institutes.
- Work with engineering teams to identify gaps in a range of products, integrate community feedback and work project road mapping.
- Develop high-quality content (tutorials, blogs, videos, streams, etc.) for the developer community.
- Organised community-oriented events (meetups, sprints, hackathons) and international conferences (JupyterCon, RSE conference, SciPy, PyCon UK, Pyjamas, ML summit among others).

Hello Soda

Manchester, UK

Data/research engineer — *June 2018-February 2019*

- Planned, implemented and supervised the further improvements of a robust data platform that allows for continuous delivery, monitoring, and logging of machine learning and natural language processing models (over 60 models with incoming data from customers in Europe, Asia, USA, and Latin America).
- Developed internal policies regarding data and software best practices, documentation, and model deployment.
- Managed engineering and data science team members: ensuring that the projects were seen to completion and deadlines were met. Worked with the team and individuals to set personal development and business goals every quarter. Led sprints planning, retrospectives and daily stand-ups.
- Introduced fortnightly documentation sprints and show and tells for the tech team (data, infrastructure, engineering) as well as a reading club for folks to share novel articles and discuss techniques and tools.
- Developed tools and infrastructure to scale, support and improve the data team tasks, from data extraction, to model development, training, and optimisation, to taking models into production.
- Leveraged the use of tools such as Elasticsearch, Airflow, Pachyderm, Docker, Rstudio, Jupyter, cloud solutions, and Kubernetes within the development areas of the business.
- Drove the adoption of tools and processes to improve our data models reproducibility, provenance (lineage), and sustainability. Leading to a 30% reduction in incidents associated with drifting, model staleness and performance.

Freelance / consultant

Manchester, UK

Data and reproducibility consultant — *Nov 2016 - present*

- Consulted start-ups and researchers on reproducible data analysis workflows, open data, data modelling, and aided them to develop strategies to satisfy their data engineering needs. Reducing in most of the cases the computational times and optimised their data-intensive workflows.
- Created and presented executive dashboards to show data insights using R Shiny apps, Plotly, and d3.js
- Implementation and scaling of data pipelines, from ETL to model deployment, monitoring and task scheduling.

The University of Sheffield

Sheffield, UK

Research software engineer / Machine learning team member — *Nov 2016 - June 2018*

- Main contributor to the European funded projects OpenDreamkit as well as to several open-source projects, such as project Jupyter, GPy for Gaussian Processes, RopenSci, among others.
- Used RESTful web design using Flask, Jinja2, JQuery, JS and Django for the development of multiple web apps.
- Developed numerous data analysis pipelines, from wrangling to prediction and results dissemination, for research projects in Linguistics (Natural Language Processing), Bioinformatics (Classification and regression), Materials science (regression), and Geography (geolocation data analysis) using R and Python.
- Implemented the use of third parties API's and web scraping to collect raw data for posterior analysis and modelling.
- Trained and supervised junior colleagues and students, with a particular focus on reproducible workflows, software development best practices, High-Performance Computing, and open-source projects.
- Worked in policy creation at both, a national and international level as a member of the UK Research Software Engineering and NUMFocus Diversity and Inclusion in Scientific Computing committees.
- Developed interactive dashboards and data visualisations using d3.js, Shiny, Bokeh, and Plotly to disseminate project findings.
- Developed tools to support reproducible research and literate programming.

NHS, Manchester business school

Manchester, UK

Consultancy fellow — *February - October 2016*

- Liaised with multiple stakeholders, from high-level directors to patients within the NHS to identify organisational needs.
- Led data collection initiative and performed the statistical analysis of the collected data. This allowed to assess the efficacy of the Healthier Together programme and predict both desired and undesired outcomes of resources reallocation.
- Developed a framework for specialist hospitals within the Greater Manchester area to improve the sharing of institutional knowledge, improving the efficiency of communication, and eliminating 50% of unnecessary meetings.

University of Southern California, MEMS

California, USA

Engineering intern — *2011*

- Performed real-time data collection and analysis for implantable drug delivery devices. The implemented models allowed for 20% increase in dose tracking and fault detection accuracy.
- Architected and implemented analytics and visualisation components for a device data analysis platform to predict potential hardware failures.

Skills

Experienced open-source contributor/maintainer with a specialization in scientific computing, including visualization, data analysis,

and applied machine learning.

Programming languages	Python, R, C/C++, MATLAB, Fortran, shell (bash) , Julia
Web technologies	HTML, css/sass, Flask, jQuery, Jinja, Django, JavaScript
Data science and data analysis	R (and tidyverse), Scientific Python stack, ML frameworks such as Tensorflow and Pytorcch, SQL, Spark
Dev Ops & data engineering	Docker, Kubernetes, Elasticsearch, Kibana, Airflow, Pachyderm, dvc
Software engineering	git, Heroku, CI/CD, testing, API development
Visualisation and reporting	D3.js, Bokeh, Seaborn / Matplotlib, Plotly, Shiny, ggplot, Dash, vega-lite
Cloud platforms	Microsoft Azure, Amazon Web Services
Languages	Spanish (mother), English (proficient), French (intermediate)

Professional activities

Founder/leader, Mentored Sprints	2018-20
Tensorflow/ML Google Developer Expert, GCP	2019-20
Tutorial chair, JupyterCon	2020
Conference committee, SciPy	2020
Programming chair, PyJamas	2020
Conference committee, ML summit	2020
Conference committee, PyCon UK	2019
Conference committee, PyCon LatAm	2019
Elected trustee, Python UK Association	2018-20
PyLadies NorthWest UK founder and organiser, UK	2018-20
Blogger, The Python Software Foundation	2018-20
Assessment group member, DISC NUMFOCUS	2018
Mentor, Hackmed and HackSheffield	2018-20
Maintainer, Software Carpentry Python Ecology Lesson	2018-20
Trainer, Software Carpentry	2018-20
ELife ambassador, ELife Innovation	2018
Open source / working in the open mentor, Mozilla Open Leaders	2018-2019
Core committee member: Surveys and community, RForwards	2017-20
Diversity chair, Juliacon	2017-18
Reviewer, ReScience	2017-20
Reviewer and editor, Journal of Open Source Software (JOSS)	2017-20
Elected member, UK Research software engineering committee	2017-20
Data scholar, Data study workshop: Alan Turing Institute	2017
Diversity and equality chair, Talks co-chair, Research Software Engineering Conference	2017-19
Diversity and equality committee member, Computer Science, University of Sheffield	2016-18
Lead Python Instructor: Manchester and Sheffield, Code First Girls	2017-18
Supporting organiser, Nanoprinting conference	2016
Cultural affair officer, Manchester Mexican Society	2015
Cultural affairs officer, Mexican Society in the UK	2014
Volunteer, Manchester Girl Geeks, The British Science Association, Coding Dojo	2013-17

Honors & Awards

John Pinner Award for exceptional community service, UKPA	2018
Diversity scholarship: speakers, PyCon US	2018
Outstanding mentor, University of Sheffield	2017-2018
SSI Fellow, Software Sustainability Institute	2017
Diversity scholarship, Diversity in Scientific Computing, NUMFocus	2017
Recognition award: staff, University of Sheffield	2017
1st prize: student talk, Hysitron meeting	2017
2nd place: Social venture, Venture further business competition	2016
1st place, venture further business competition	2015
1st place: postgraduate presentation, Writington gold medal	2013
CONACYT/Manchester scholar, University of Manchester	2013-16
Academic excellence scholarship, SEP	2013-2016
USC Viterbi: Engineering scholarship, University of Southern California	2011
Academic excellence scholarship, UNAM-SEP	2008-11