Tania R. **Allard**

RESEARCH SOFTWARE ENGINEER · DATA SCIENTIST

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Profile

Formerly Tania Sanchez Monroy. Eligible to work in the UK.

A passionate innovator with experience in bringing new technology to bear on complex research and data science challenges. Passionate about open source, open science, data infrastructure and tools, reproducibility and ethics in data intensive applications. Strong communicator and experienced community builder.

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 the 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

Hello Soda *Manchester, UK*

DATA/RESEARCH ENGINEER *June 2018-present*

- Planned, implemented and supervised the further improvements of a more 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 junior members of the team: day to day tasks monitoring, personal development and led discussions on the future of the company technology.
- Introduced fortnightly documentation sprints and show and tells for the tech team (data, infrastructure, engineering).
- 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.

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 a number of 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 member of the UK Research Software Engineering and NUMFocus Diversity and Inclusion in Scientific Computing committees.
- Developed interactive dashboards and data visualizations 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 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 visualization components for a device data analysis platform to predict potential hardware failures.

Skills

Experienced open source developer/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), Sickit-learn (Python), SciPy, Pandas, Numpy, SQL, Spark
Dev Ops & data engineering	Docker, Kubernetes, Elasticsearch, Kibana, Airflow, Pachyderm
Software engineering	git, Heroku, CI/CD, testing, API development
Productivity tools	LaTeX, Jupyter notebooks , R markdown
Machine learning	Linear/logistic regression, Clustering, k-NN, Random Forests, PCA, NLP, Decision trees
Visualisation and reporting	D3.js, Bokeh, Seaborn / Matplotlib, Plotly, Shiny, ggplot, Dash, vega-lite
Cloud solutions	Microsoft Azure, Amazon Web Services
Engineering / mathematical software	LabView, SIMULINK, MATLAB (incl. optimisation toolbox), Mathematica
Languages	Spanish (mother), English (proficient), French (intermediate)

Mentoring

University of Sheffield *Sheffield, UK*
PhD STUDENTS MENTOR *September 2017 - present*
- Provided mentorship and guidance for PhD students completing their graduate studies.
- Was awarded the distinction of outstanding mentor: (`https://www.sheffield.ac.uk/rs/ecr/mentoring/dotm`).

Mozilla Open Leaders Mentor *USA, UK*
MOZILLA FOUNDATION *February 2017 - present*
- Invited to act as a mentor during Round 5 of Mozilla's Open Leadership Training.
- Meeting with assigned project lead to provide insight and support with their OSS projects.
- Gained valuable coaching skills and connections across the Mozilla and open source community.

Technical mentor *Sheffield, UK*
HACKMED AND HACKSHEFFIELD *January 2017 - present*
- Acted as technical mentor during the events, providing guidance and expertise to the teams competing.
- Was involved in the organisation, advertising, and logistics of the events.