Thomas Davidson BA, MEng

PhD Student / Candidate | Max Planck Institute for Software Systems 2019 - 2022
PhD Student | Emory University 2023 -

I am currently studying for a PhD in the field of information visualisation, specifically related to personal informatics visualisation at Emory University. I previously worked as a PhD student and candidate at the Max Planck Institute for Software Systems until my academic advisor left the institute in 2022 and I transferred to Emory to work with a new advisor - Emily Wall. I graduated from Cambridge University, achieving a distinction in an MEng in Computer Science. Alongside my studies I enjoy sport (especially running, rugby and cricket), music, and photography.

Contact details

Website:	https://tjd45.github.io
Email:	Thomas.James.Davidson@emory.edu

Education

Emory University
JANUARY 2023 - PRESENT

Degrees:	PhD in Computer Science
Projects:	Since moving to Emory I have taken on a new direction of research within the field of personal informatics and information visualisation. Seeking to begin to address the problem of bridging the 'personal informatics analysis gap'. My work has looked at trying to understand what kinds of insights users would like to gain from their personal information, through the lens of music listening history, completing a quantitative and qualitative survey project which is under review for CHI 2025.
Teaching:	TA for 'Information Visualisation' Fall Semester 2023
	TA for 'Design Studio in HCI' Spring Semester 2024

Max Planck Institute for Software Systems - University of Saarland
OCTOBER 2019 - NOVEMBER 2022

Degrees:	PhD in Computer Science
Projects:	My research focussed on the visualisation of distributed tracing data. I completed survey work looking at the state of visualisation presentation in systems literature and passed my qualifying exam in November 2021 with very positive reviews. I executed a qualitative interview study with the goal of implementing novel visualisation solutions for distributed tracing. This work took the form of interviews with professionals from industry to initially understand and characterise the problem area, before working together in a form of participatory design to develop solutions.
Teaching:	TA for 'Distributed Systems' Summer Semester 2021

University of Cambridge
OCTOBER 2015 - JULY 2019

Degrees:	BA Hons. and MEng in Computer Science - Class: 1st Class with Distinction - 2019
Projects:	Second Year: Project manager of a group of 6 with an industry partner to develop a representation of mixed traffic around cities by aggregating data sources, to allow the routing of autonomous drones through populated areas. Used the Cesium framework and javascript, and managed a successful team to completion where we all achieved full credit.
	Third Year: Individual project investigating automating Rubik's cube solving using search-based and machine learning approaches in Java using various frameworks. Was awarded a first class grade for my dissertation and project.
	Fourth Year: Self-proposed collaborative project and dissertation exploring the use of text and information visualisation techniques in analysing and studying literature. Working with students studying for Masters in English to develop a usable, exploratory analysis tool.
Prizes:	- Don Hanson Scholarship 2019 - Title of Scholar 2019 - Intermediate Exhibition 2018

Publications and Projects

Spotify Warped - Can Music Listening History pave the way for Casual User Data Engagement? - Submitted to CHI 2025 (Under Review)
SEPTEMBER 2024 - **THOMAS DAVIDSON**, ETHAN LEE, EMILY WALL

Crowd-sourced online study which used mix methods analysis to examine and contrast the information desires of casual users and quantified selfers, investigate how well existing QS frameworks can describe casual users' needs, and explore barriers that exist for users to access and meaningfully engage with their personal data. The work establishes the kinds of insights users want to learn about their behaviour through the lens of music listening history and extracts an information space to describe these insights as well as highlighting the specific areas of music listening that participants were interested in learning about.

Confirmation Bias: The Double-Edged Sword of Data Facts in Visual Data Communication - Submitted to CHI 2025 (Under Review)
SEPTEMBER 2024 - SHIYAO LI, **THOMAS DAVIDSON**, CINDY XIONG BEARFIELD, EMILY WALL

A project investigating the impact of data-facts on confirmation bias. Through a series of controlled pilot studies and a series of crowd-sourced experiments we explored the biasing effect of data facts and visual embellishment, discovering that presentation style, content, and alignment with pre-existing beliefs can significantly impact confirmation bias.

Qualitative Interview Study of Distributed Tracing Visualisation - TVCG 2023 (Presented at IEEE VIS 2023)
FEBRUARY 2023 - **THOMAS DAVIDSON**, EMILY WALL, JONATHAN MACE

Interview study with 6 professionals from industry to derive a set of guidelines for designing and implementing visualisations in distributed tracing. Using qualitative interview techniques and open coding I extracted use cases and challenges over three rounds of interviews and developed the first characterisation of this problem space.

See it to Believe it? The Role of Visualisation in Systems Research - Symposium on Cloud Computing 2022
NOVEMBER 2022 - **THOMAS DAVIDSON**, JONATHAN MACE

A survey paper of over 1,200 papers published in the last 5 years at top tier systems conferences that illustrated a significant minority of systems work presents tools requiring human-facing visualisation. Designed and implemented a survey which showed that the majority of these publications under present their user-facing components and proposed a checklist for future authors to follow.

The Odd One Out: Energy is not like Other Metrics - HotCarbon 2022
JULY 2022 - VAASTAV ANAND, ZHIQIANG XIE, MATHEUS STOLET, ROBERTA DE VITI, **THOMAS DAVIDSON**, REYHANEH KARIMIPOUR, SAFYA ALZAYAT, JONATHAN MACE

A position paper discussing the difficulties of recording and analysing energy consumption statistics in a distributed environment.

Digital Relationships - Science Gallery Youth Symposium 2021
JULY 2021 - **THOMAS DAVIDSON**

An interactive data visualisation project that allowed users to generate explorative and informative visualisations based on their own Facebook messaging data. The website (https://tjd45.github.io/Digital-Relationships/) and visualisations were mainly developed using d3.js and the work was selected and subsequently presented as an interactive workshop at the Science Gallery's Youth Symposium in 2021.

Aggregate-Driven Trace Visualisations for Performance Debugging - ArXiv
OCTOBER 2020 - VAASTAV ANAND, MATHEUS STOLET, **THOMAS DAVIDSON**, IVAN BESCHASTNIKH, TAMARA MUNZNER, JONATHAN MACE

An approach for visualising aggregate behaviour of a system whilst investigating individual distributed traces. Developed novel visualisation approaches to facilitate aggregate context being displayed in a focused view.

Academic Service

Reviewing

CHI 2025 - OCTOBER 2024 - **2 FULL PAPERS**
VIS 2024 BELIV - MARCH 2024 - **2 WORKSHOP PAPERS**

Experience

Software Engineer Intern
GEOSPOCK LTD, ST. ANDREWS HOUSE, ST. ANDREWS ROAD, CAMBRIDGE, UK | JULY 2018 - AUGUST 2018

Worked for 8 weeks for a Cambridge-based big, real-time, geographical data company as part of the front-end visualisation team. I integrated with the team and participated as a full team member during sprints. Over the summer I:

- Worked mainly with Javascript and CSS to implement visual and functional changes to the product
- Used frameworks like React alongside graphQL to enable integration of database information into the UI
- Worked in an agile manner and used software such as Jira and Bitbucket extensively

Graduate Engineer Intern
BAE SYSTEMS, APPLIED INTELLIGENCE, GUILDFORD, UK | JUNE 2017 - SEPTEMBER 2017

Worked for 12 weeks over the summer for BAE Applied Intelligence, Commercial Solutions. During this time I worked primarily on building a new data ingestion platform as a proof of concept for the company to take forward and potentially adopt. I also completed and won an innovation stretch project with other interns outside of my standard work and was praised for my diligence and ability to adapt to and overcome new challenges in my end of internship review. During my time with BAE I:

- Worked extensively with big data technologies and clustered environments.
- Developed expertise in Nifi, Kafka, HDFS, ElasticSearch and Ambari.
- Extensively tested the system I built using unit testing as well as custom bash scripts and metric collectors.
- Won the innovation stretch project as part of a team of 3 with our solution to 'Improving Public Transport'.

Microsoft Student Partner
CAMBRIDGE, UK | APRIL 2016 - JUNE 2017

I was selected from a very competitive application cohort to become a Microsoft Student Partner for an academic year. As part of the programme I attended events run by Microsoft and helped to run workshops aimed at University students. In general this involved:

- Helping to run tech events and competitions in Cambridge.
- Interacting with Microsoft Valued Professionals to arrange talks and showcases.
- Participating in Microsoft training events to learn new skills.

Software Development Engineer
VISIONBLUE SOLUTIONS, DUBLIN, IRELAND | JULY 2015 - SEPTEMBER 2015 (INTERN :SEPT 2014 - NOV 2014)

Following an internship with this company, I was invited to work for them as a full time software developer until I went to university in October. During my time with Visionblue I:

- Was quickly moved from working on the support desk to work on the technical development team.
- Responded to user-raised problems and repaired several issues in the software using Delphi.
- Helped develop their database system using SQL to improve efficiency and decrease overheads.
- Added new functionality requested by end users of the product.

Additionally, I liaised with clients on a day to day basis. I was able to work largely independently while recognising when to communicate with my superiors.

Other experience has included work as a campsite manager in Namibia (May 2015 - July 2015), shift supervisor in Austria (Nov 2014 - Apr 2015), teaching assistant for Japanese school children with Bluebridge Education (Mar 2016), bar staff at music festivals in the UK (Sept 2016 - 2017), a facility supervisor for GSAL enterprises (Sept 2013 - Aug 2014), and working as a General Administrator for CreditFix databasing sensitive files (Aug 2013 - Sept 2013)