



The Athena SWAN (Scientific Women's Academic Network) Charter was established in 2005 with the aim of "Encouraging and recognising commitment to advancing gender equality" within STEM subjects, i.e., science, technology, engineering, and mathematics. The Athena SWAN agenda has grown overtime to promote equality in general. Scan the QR code opposite for more background about Athena SWAN at Heriot-Watt, including guidance and resources.



1. Celebrating Ada Lovelace Day on the Edinburgh Campus

Ada Lovelace Day 2025 Edinburgh Campus



Whose Gold? Re-imagining Alignment for Truly Beneficial AI



An Open Lunchtime Lecture by*

Verena Rieser

Research Scientist at Google DeepMind

1pm on Thursday 9 October 2025

Lecture Theatre 4

Hugh Nisbet Building

* This lecture is **open to all** staff and students at Heriot-Watt as well as the wider community. Seating is limited, so **Registration is REQUIRED**. Register **FREE** via the **URL** or **QR code** below:

<https://tinyurl.com/ALD-2025>

**Registration OPENS on
Thursday 11 September**



Abstract: Human feedback is often the "gold standard" for AI alignment, but what if this "gold" reflects diverse, even contradictory human values? This keynote explores the technical and ethical challenges of building beneficial AI when values conflict -- not just between individuals, but also within them. My talk advocates for a dual expansion of the AI alignment framework: moving beyond a single, monolithic viewpoint to a plurality of perspectives, and transcending narrow safety and engagement metrics to promote comprehensive human well-being.

Bio: Verena Rieser is a Senior Staff Research Scientist at Google DeepMind, where she founded the VOICES team (Voices-of-all in alignment). Her team's mission is to enhance Gemini's safety and usability for diverse communities. Verena has pioneered work in data-driven multimodal Dialogue Systems and Natural Language Generation, encompassing conversational RL agents, faithful data-to-text generation, spoken language understanding, evaluation methodologies, and applications of AI for societal good. Verena previously directed the NLP lab as a full professor at Heriot-Watt University, Edinburgh, and held a Royal Society Leverhulme Senior Research Fellowship. She earned her PhD from Saarland University.



This event is organized by the MACS Athena SWAN Team





2. Celebrating Ada Lovelace Day on the Dubai Campus

Ada Lovelace Day 2025 - Dubai



Image taken from TechGig: *Ada Lovelace Day: Commemorating the world's first computer programmer (2020)*

A MACS Ada Lovelace Day 2025 event will take place in **October**. Ada Lovelace Day is celebrated every year on the second Tuesday of October month to celebrate the contribution of women in Science, Technology, Engineering and Maths (STEM) in the memory of the world's first computer programmer.

Calling all current **Y4 Computer Science** students to step into the spotlight and share your passion, projects, and career goals in a dynamic format using the **PechaKucha presentation** style. Each presenter shows 20 slides, each for 20 seconds of their achievements as a Computing Heriot Watt student.

Join us for the electrifying **PechaKucha presentations** where creativity knows no bounds! Participate in our event, develop your soft skills and broaden your network.

Event Details:

Date: Thursday 9th October 2025

Time: 5pm-6pm

Venue: James Watt Building: Location - JW1.17

A few presenter slots are still available, please get in touch via the email address below to secure a place to showcase your work.

d.sobnath@hw.ac.uk

Organizers: Drishty Sobnath





3. A Women@CS event on the Edinburgh Campus

Throw a Strike!

WITH US



Women@CS

THUR 16TH OCT

.....

4 pm - 6 pm

.....

Fountain Park, Dundee st, Edinburgh EH11 1AW

Please rsvp to Catherine or Precious

cm2165@hw.ac.uk po2010@hw.ac.uk





4. Mufliha Shake Dawood's Athena Swan Summer Bursary Project Report

AI Career Compass: Research Findings

Mufliha Dawood | BSc (Hons) Computer Science (AI) | Dubai Campus | Summer 2025 | Supervisor: **Professor Cristina Turcanu**

This project investigated the technical and contextual feasibility of developing an AI-powered career transition tool for women and minorities in the UAE tech sector through comprehensive literature analysis and technical exploration.

The research uncovered a compelling paradox in UAE's tech workforce development, showcasing a gap in women's employment position. Three primary barriers emerged: cultural/social constraints (77% cite family considerations), institutional challenges including limited flexibility, and economic disparities reflecting gender pay gaps. (Pearl Initiative, 2021) However, successful examples exist: space workforce reports 45% female participation (Kais Zribi, 2025), while Strata manufacturing has 90% Emirati women (Strata, 2024), demonstrating intervention effectiveness.

Currently, no detailed longitudinal datasets track career re-entry, progression, or retention by gender and minority status in UAE technology roles. Existing career platforms employ Western-centric models inadequately representing regional particularities, creating opportunities for AI-driven analytics and personalized guidance solutions.

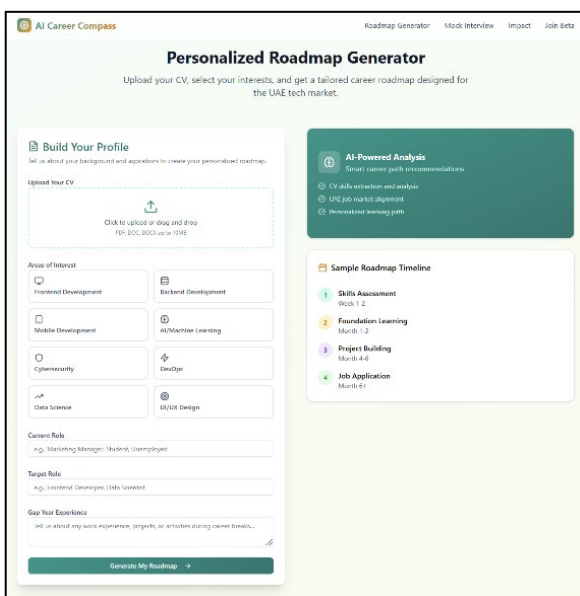


Figure 1: AI Career Compass Personalized Roadmap Generator Interface - Creates customized career transition pathways based on user profile, interests, and UAE tech market requirements.

The research informed preliminary technical architecture prioritizing:

1. Multi-modal data integration combining structured career data with unstructured cultural preferences
2. Bias-aware algorithm development addressing documented AI discrimination patterns
3. Explainable AI features ensuring transparency in recommendation logic

Streamlit-based prototypes with API integration validated core functionality concepts while revealing fundamental limitations: without UAE-specific training data, AI responses risk hallucination and cultural misalignment. Despite substantial diversity initiative investments, rigorous outcome measurement remains limited across NAFIS, DEI programs, and upskilling initiatives.

The dual research-development approach provided essential groundwork for evidence-based AI tool development in this underexplored domain, highlighting the critical role of culturally informed training data in effective career transition support systems.

This project proved exceptionally rewarding, combining policy-driven technology solutions with hands-on technical development. The interdisciplinary nature aligned with career aspirations in ethical AI and social impact technology, strengthening commitment to creating technological solutions addressing real-world diversity challenges in the UAE tech ecosystem.

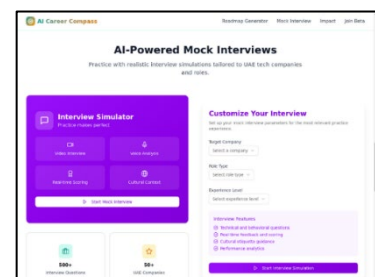


Figure 2: AI-Powered Mock Interview Simulator - Cultural context-aware interview practice tool with real-time scoring and feedback for UAE tech companies.

Bibliography

1. Khaleej Times. (2025). UAE: 61% of graduates in STEM fields are Emirati women. [online] Available at: <https://www.khaleejtimes.com/uae/education/emirati-women-stem-graduates>.
2. United Arab Emirates (UAE): Legal reforms to strengthen women's economic inclusion – Case Study. [online] Available at: <https://documents1.worldbank.org/curated/en/099419309142218876/pdf/IDU073eb970d033eb04d4608fc80d158fa944973.pdf>.

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1. Pearl Initiative, THE CEO AGENDA. (2021). Available at: <https://www.pearlinitiative.org/wp-content/uploads/2021/11/Womens-Careers-in-the-GCC.pdf> [Accessed 25 Sep. 2025].
2. Kais Zribi (2025). Emirati Women Lead the UAE's Digital Future through Lifelong Learning and Upskilling. [online] Entrepreneur. Available at: <https://www.entrepreneur.com/en-ae/entrepreneurs/emirati-women-lead-the-uaes-digital-future-through/496462> [Accessed 25 Sep. 2025].
3. Strata. (2024). Strata's Emirati Women Pioneer Aerospace Industry - Strata. [online] Available at: <https://www.strata.ae/press-release/stratas-emirati-women-pioneer-aerospace-industry/> [Accessed 25 Sep. 2025].





5. Nicelin Printo's Athena Swan Summer Bursary Project Report

Comparing two Large Language Models (LLMs) to build a fitness mobile application prototype tailored for pregnant women, including prenatal and postpartum routines

By **Nicelin Printo** and Supervised by **Dr. Drishty Sobnath**

Project Overview

Through the Athena SWAN bursary, I developed GlowMama, a fitness mobile application prototype designed for pregnant and postpartum women. The app leverages Large Language Models (LLMs) and no-code platforms to demonstrate how non-technical users can design meaningful health applications.

- Onboarding Module: Collects trimester, fitness level, and profile.
- Exercise Programmes: Generates safe, NHS-approved prenatal and postpartum exercises.
- Reminder System: Daily workout notifications, including recovery notes for postpartum users.
- Progress Monitoring: Weekly grid to track exercise completion.
- FAQ Chatbot: Provides answers to common pregnancy fitness questions.

I compared two AI tools:

- Base44 → reliable prototyping with secure sign-up.
- Claude Sonnet 4 → creative app design, React code generation, and thoughtful details.

Together, these supported the development of a prototype demonstrating the app's core features.

Comparative Analysis of Claude Sonnet 4 and Base44

Prompt: "Now add a FAQ chatbot screen. Simulate the user typing: "Is yoga safe in the third trimester?" Respond with a friendly, safe, and informative answer. Use the same user profile context."

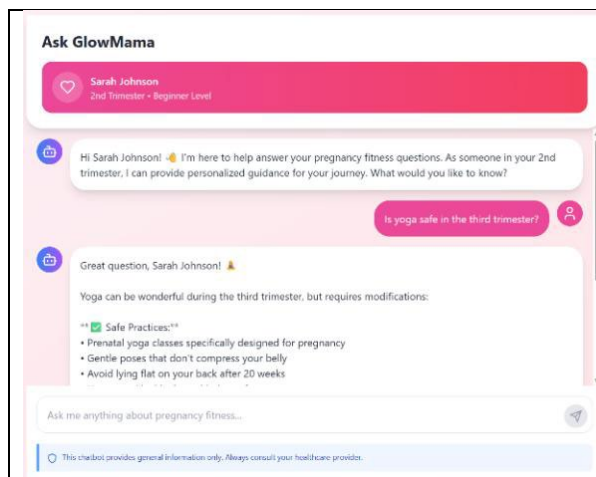


Fig. 1 – FAQ chatbot in Claude Sonnet 4

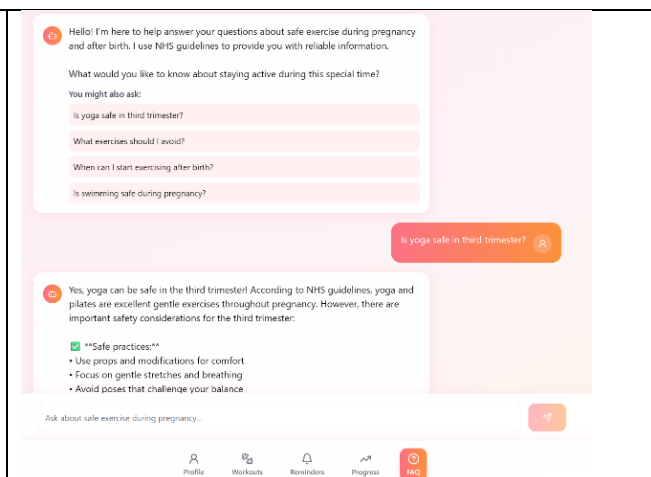


Fig. 2 – FAQ chatbot in Base44

Reflection

The project was both helpful and challenging. I valued how Claude added creative refinements while Base44 reliably produced working screens, with Claude's code explanations offering a bridge from no-code to coding concepts. The experience strengthened my confidence in prompt engineering, UI design, and applying AI to healthcare contexts. Seeing GlowMama run as a prototype was rewarding, and the bursary made it possible to explore how AI can open new opportunities for women in technology.

Full Project Report: [MACS AthenaSWAN Bursary2025 ProjectSummary NicelinPrinto.pdf](#)





6. Helen Pui-Sarn Chang's Athena Swan Summer Bursary Project Report

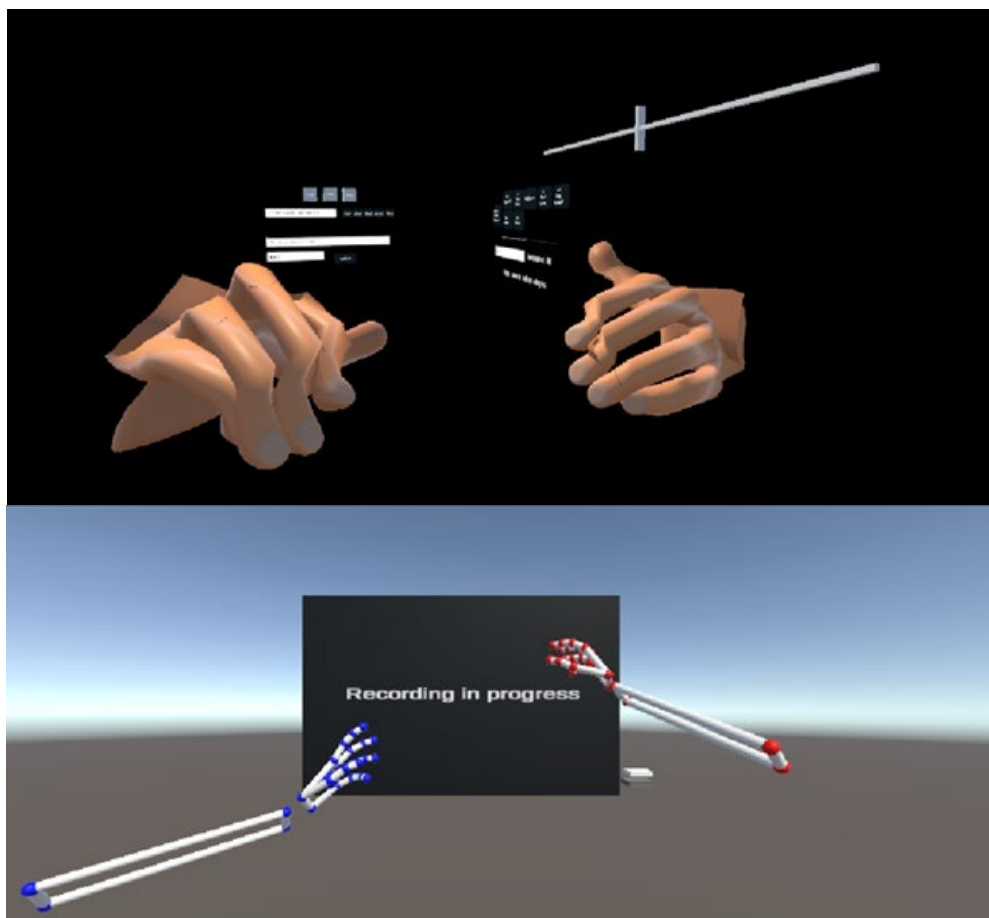
Exploring Biomarkers for Data Visualisation

By Helen Pui-Sarn Chang and supervised by Dr Marta Vallejo

This project was to be a hand motion recording program intended for use in sign language learning applications. I started with going through a few courses and other materials to gain some understanding of C# and the Unity Game Engine. I then began making the recording program; first, working on information extraction, then on a Leap Motion UI, then data serialization and finally file writing. After this I started on my replay program. I began with working on file reading, then deserialization & easy data access, then (using a Unity Asset Store model) the actual replay and finally I worked on a HoloLens 2 UI for the replay program. I met with my supervisor once a week, when possible, to discuss what I had done since the last meeting and what should be done next.

In regards to the project outcomes from this project, I have created a program that records, serializes and writes the hand movements from a Leap Motion Controller into a text file; an additional program that reads the previously created text file, deserializes the contents and replays the same hand movements using a different hand model and a small report for future students to know what improvements could be made.

Overall, during the course of this project, I have gained more confidence and experience in independently working on a project, starting from scratch, having more control over how it works and what packages & namespaces it uses. Additionally, I gained experience in learning languages and engines that I have never had experience with previously as well as experience in navigating depreciated documentation, instructions etc. I found this project very interesting and engaging – often finding myself researching things such as Quaternions and frames so I could understand how to use the Unity types and modules.





7. Lolita Hasanova's Athena Swan Summer Bursary Project Report

Exploring Dependent Types with Agda

By **Lolita Hasanova** and supervised by **Swaraj Dash**

In summer 2025, I undertook an internship at Heriot-Watt University, made possible through the MACS Athena SWAN Summer Bursary scheme, where I explored the field of dependent types through the Agda programming language. Dependent types represent a significant extension of functional programming: they allow types to depend on values, making it possible to encode precise mathematical properties directly into a program's type system. As a result, the compiler not only verifies that code is syntactically and type correct, but also that it satisfies its formally stated properties.

My project focused on contributing to the Agda Standard Library (agda-stdlib), specifically the module for vectors (Data.Vec). While the library already supported a range of vector operations, many important properties were missing. In particular, the `padRight` function, which extends a vector to a specified length by padding it with default elements, lacked proofs describing its interaction with other fundamental operations.

To address this, I formalised and proved several previously absent properties, focusing on how `padRight` interacts with core vector operations such as mapping, zipping, element lookup, updating, removing, inserting, and reversing. Additionally, I extended the library with proofs for the related function `padLeft`. These contributions strengthen the vector library by making it more consistent, complete, and reliable. Although my changes have not yet been merged into the public repository, they are ready for integration and will support the long-term robustness of `Data.Vec`.

The internship was both challenging and rewarding. Working with dependent types requires a mindset shift: programming becomes inseparable from proof construction. Instead of merely writing code, one is simultaneously building mathematical arguments about its behaviour. This often felt like solving complex logical puzzles at times demanding, but ultimately very rewarding when a proof was successfully completed.

A highlight of the experience was recognising how type theory combines rigor with creativity, making program verification feel less like routine work and more like engaging problem solving. This perspective was reinforced by the guidance of my supervisor, Assistant Professor Swaraj Dash, who guided me throughout the internship and provided invaluable support at every stage, helping me navigate complex concepts and refine my approach.

Contributing to an open-source project on GitHub further enhanced the experience, providing the opportunity to work on a real issue in a widely used library. This not only deepened my technical skills in proof engineering but also gave my work a tangible sense of impact. Equally valuable was the opportunity to interact with researchers and fellow students working in type theory and functional programming. Being part of such a stimulating academic environment was motivating and inspiring.

In summary, the internship, supported by the MACS Athena SWAN Summer Bursary scheme, provided me with hands-on experience in dependently typed programming and proof development, while allowing me to make substantial contributions to the Agda Standard Library. Under the guidance of Assistant Professor Swaraj Dash, whose expertise and mentorship were invaluable throughout the project, I was able to tackle complex challenges, develop a deeper understanding of type theory, and refine my approach to formal proofs. This experience was both intellectually demanding and highly rewarding, leaving me with enhanced technical skills, meaningful professional connections, and a lasting appreciation for the precision and elegance of dependently typed programming.

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vector.agda 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 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8. Maria Kirilova's Athena Swan Summer Bursary Project Report

Developing Shared Mental Models with Topic Visualisations By Maria Kirilova and supervised by Dr Pierre Le Bras

My project focused on how people perceive and interpret the content of large document collections. These collections contain a wide range of topics, but it's often difficult to grasp them. One way to address this is through Topic Modelling, an unsupervised machine learning technique that extracts themes across documents as related “bags of words”, which then offers high-level summaries. Topic modelling can support tasks such as identifying documents or highlighting underrepresented areas. There are also a variety of ways to visualise topic models, such as Topic Maps (see Figure 1).

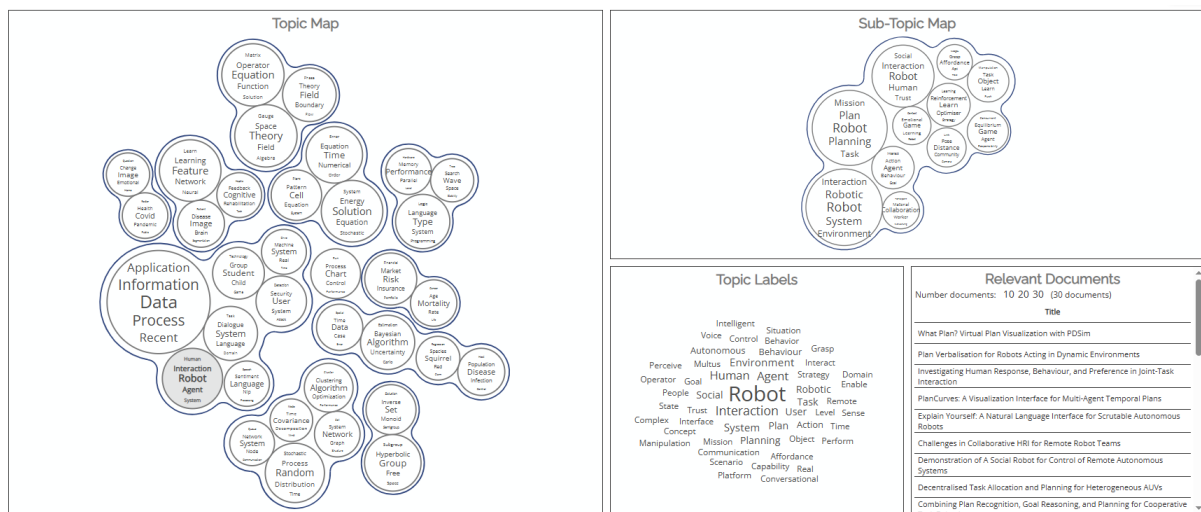


Figure 1: Topic mapping of MACS research output over the last 10 years, showing the main topics, their sub-topics, labels and corresponding documents (developed by Dr Pierre Le Bras)

We hypothesised that these models and visualisations can reveal biases in how people perceive the collections, and so, the project explored how these visualisations can impact mental models: how people represent external things internally. There is plenty of evidence that mental models are inherently incomplete or skewed, as they are often affected by an individual's experiences and expectations. This raises questions about a person's reliability when they make decisions.

My work had two main components. First, I complemented a literature review on mental models in the context of information visualisation research. One of the key conclusions is that, ironically, everyone has their own mental model of what a mental model is. With information visualisation specifically, there has been limited work on the duality of mental models: how users internalise the visualisation itself vs. the information it represents. Second, I helped design a protocol to study how group settings influence mental model biases and whether topic model visualisations help correct them. I then facilitated a focus group, observing how the participants' collective understanding of a document collection evolved with and without the topic map. Early findings suggest that group discussion alone helped correct individual biases, but the visualisation played an important role in solidifying the group's understanding and confidence in their shared mental model.

The internship gave me a unique window into academic research, allowed me to learn more about the topics that excite me, and helped me develop an appreciation for the complexities behind the scenes of research and academic work. What I enjoyed most was the collaborative, iterative process of refining ideas - seeing how they evolved through creativity and discussion until they finally clicked into place.

I am deeply grateful to MACS Athena SWAN and Dr Pierre Le Bras for making this opportunity possible. It's rare to come away from a short internship with such motivation and clarity about the direction I want to take, and I wholeheartedly recommend the scheme to anyone eager to explore research first-hand.





9. Precious Onuora's Athena Swan Summer Bursary Project Report

A website for Women@CS

By **Precious Onuora** and supervised by **Jeevani Goonetillake**

Over summer 2025, I had the opportunity to work with **Heriot-Watt University** through the **Athena SWAN Bursary Scheme**. My project focused on developing a brand-new website for **Women@cs**, a community dedicated to supporting and inspiring women in computer science.

The website now provides:

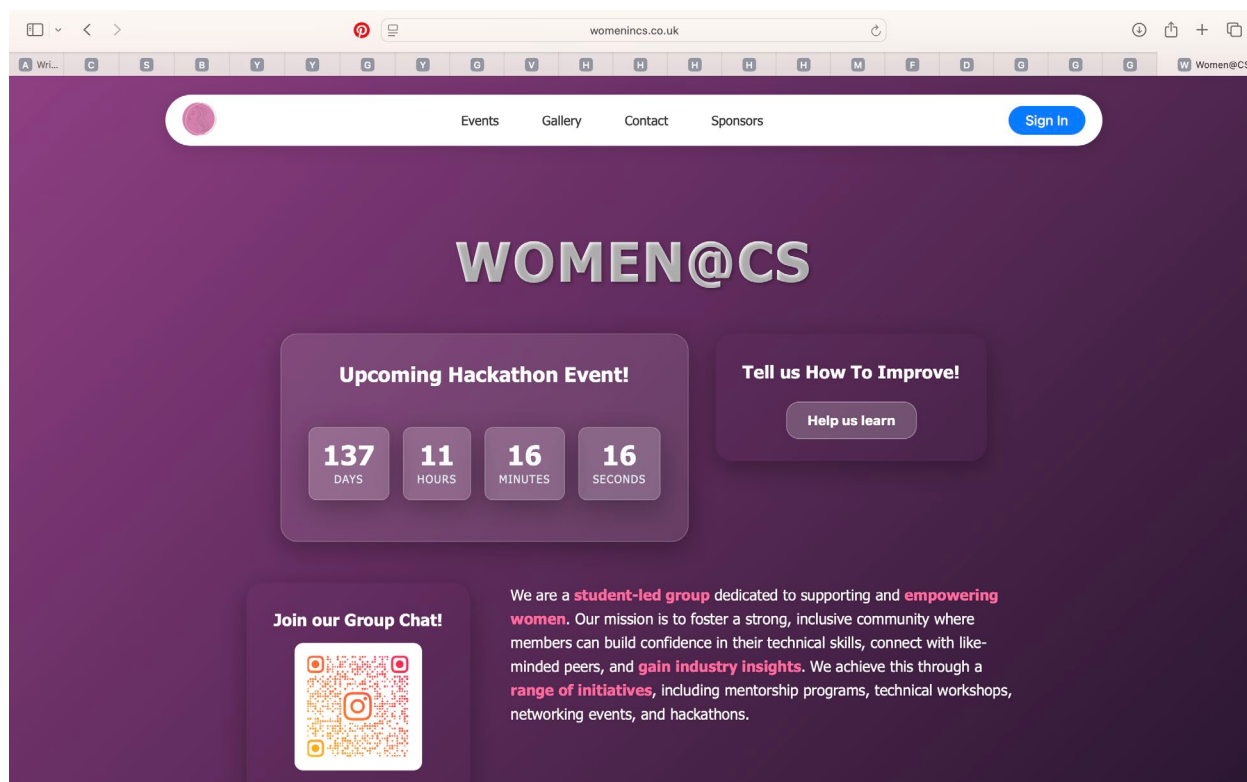
- **A public hub** to showcase events, sponsors, and our mission.
- **A secure member area** where users can register, manage profiles, and connect.
- **A modern, professional platform** designed to grow alongside the community.

Through this project, I gained valuable experience in **web development, problem-solving, and building secure, user-friendly spaces online**. With the guidance of my supervisor, **Jeevani Goonetillake**, I was able to bring the project to life. Most importantly, I loved seeing how my work could directly contribute to a welcoming and empowering community.

This bursary has been an amazing opportunity—I gained new skills, confidence, and the joy of building something that will have a real impact.

Full site: <https://womeninics.co.uk>

Full report: <https://tinyurl.com/assb2025>





10. Lola Sheehy-White's Athena Swan Summer Bursary Project Report

Designing Inclusive Learning Games to Build Computer Confidence for Pupils with Additional Support Needs

Student: **Lola Sheehy-White**

Supervisor: **Alistair McConnell**

Athena SWAN Bursary 2025

Introduction

This project aimed to create resources that introduce Computing to Primary-aged pupils with Additional Support Needs (ASN). The focus was on inclusivity, accessibility, relevance, and confidence building, rather than just focused curriculum content.

We recognised challenges like the scarcity of Computing resources designed for ASN pupils, the need to accommodate diverse learning styles, and the possibility of explaining basic concepts acting as a barrier.

Research and Design

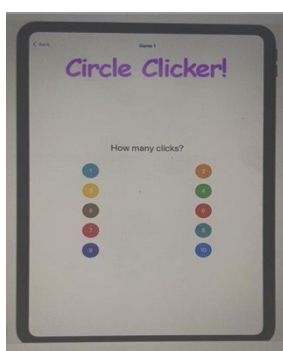
Literature revealed that educational games are highly effective for pupils with ASN, especially when they incorporate open-ended game challenges, task scaffolding, and clear visual cues and feedback. Teachers confirmed they refer to pre-Early and Early level CfE Experiences and Outcomes, so resources needed to be simplified accordingly. We also discussed what long-term IT life skills this population would specifically benefit from different to their mainstream peers, i.e. navigation of communication devices, sensory experience apps etc. Observing ASN pupils, I noted they were responding to using iPads with tools like 'BoardMaker' symbols to aid understanding. The design phase involved a SWOT analysis of existing apps, a mood-board for key design choices (e.g., pastel colours for less stimulation), and a MoSCoW requirements analysis.

Development

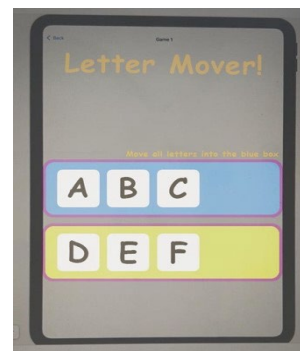
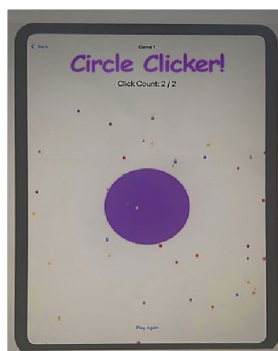
Using Xcode so I could test on iPads, I developed early prototypes:



A simplified carousel for game selection



A button clicking game with choices and visual feedback to reinforce cause and effect



A letter dragging game inspired by pupils' talkers

Conclusion

The project shifted from 'Computer Science curriculum' to 'Real-life confidence-building' games. Teachers responded positively to both the shift and the project games. Key next steps are to adapt the letter dragging game to include letter sounds, lowercase letters, and eventually symbols (currently under copyright) and then work through the requirements. This project has strengthened my skills in Xcode, research, and design and I look forward to expanding these games further.





11. Onn Qi Pah's Athena Swan Summer Bursary Project Report

Learning Quantum through Interactive Resources

By **Pah Onn Qi** and supervised by **Kai Lin Ong**

Video Link: [Quantum Introduction Video](#)

Full Report Link: [Full Report](#)

As part of the MACS Athena SWAN Summer Bursary Scheme, I produced an 11-minute educational video designed to make the fascinating yet often intimidating world of quantum computing more accessible.

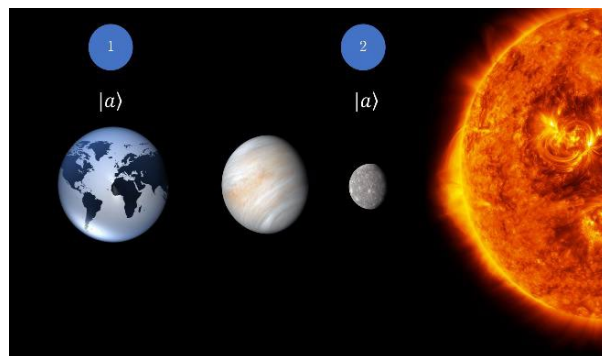
The video introduces the basics of qubits, explains superposition and entanglement, and highlights real-world applications such as quantum encryption. The motivation for this project stemmed from the perception that quantum computing is notoriously difficult to understand, which often discourages newcomers. By linking theory to practical applications, the video aims to demystify quantum concepts and encourage a broader interest in the field.

A general quantum state $|\psi\rangle$ is a linear combination (or superposition) of these basis states:

$$|\psi\rangle = c_1 \begin{bmatrix} 1 \\ 0 \\ 0 \\ \vdots \\ 0 \end{bmatrix} + c_2 \begin{bmatrix} 0 \\ 1 \\ 0 \\ \vdots \\ 0 \end{bmatrix} + c_3 \begin{bmatrix} 0 \\ 0 \\ 1 \\ \vdots \\ 0 \end{bmatrix} + \dots + c_n \begin{bmatrix} 0 \\ 0 \\ 0 \\ \vdots \\ 1 \end{bmatrix} = \begin{bmatrix} c_1 \\ c_2 \\ c_3 \\ \vdots \\ c_n \end{bmatrix}$$

This journey was both rewarding and challenging. I particularly valued the opportunity to learn quantum computing from the ground up, not only grasping its fundamentals but also finding creative ways to communicate them to a wider audience.

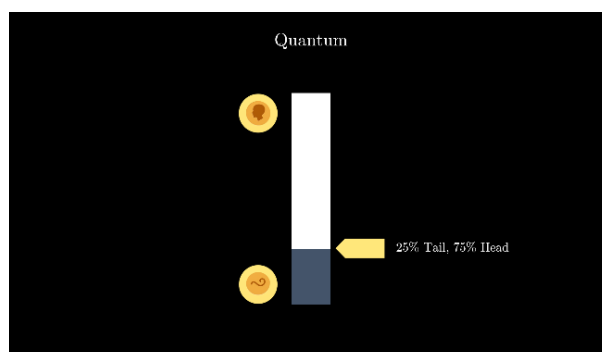
The process strengthened my knowledge and sparked my passion for further research, laying the foundation for my final-year project on quantum walks and their potential to enhance the PageRank algorithm.



A key challenge was designing visuals and explanations that could resonate with viewers without assuming a strong mathematical background. Achieving the right balance between accuracy and accessibility required careful thought, creativity, and iteration.

I am deeply grateful to MACS Athena SWAN for supporting this project. The scheme gave me the chance not only to explore cutting-edge science but also to develop valuable skills in communication, video editing, and problem-solving. Heartfelt thanks go to my supervisor, Dr. Ong Kai Lin, for his guidance and constructive feedback.

Looking ahead, I hope this video will inspire students, especially women in STEM who are curious about quantum computing but may feel hesitant to explore it due to perceived difficulty. By creating accessible learning resources, I aspire to contribute, in a small way, to fostering greater inclusivity in STEM and encouraging underrepresented groups to see themselves as part of this rapidly evolving field.





12. Your invitation to a HWU STEM Inclusivity Network Event

STEM Inclusivity Network meet & greet

As we go into the new academic year, you're invited to a *meet & greet* event on Edinburgh campus. This will be an opportunity to:

- Hear more about the network and what we have achieved over the last few years
- Input to what you would like to see the network focus on this year (2025-26)
- Find out about funding opportunities for activities that support inclusion in STEM
- Make connections with other colleagues and students

Please RSVP here:

<https://forms.office.com/e/YG4kMfTsdS>

and feel free to invite other colleagues!

STEM Inclusivity
Network
Meet & Greet

*Hear about our network and
available funding opportunities,
input to our plans for the year,
and make connections!*

GRID Showcase area
Tuesday 7 October 2025
11am-12pm





13. Carer Awareness Training



Thursday 2 October 10:00-11:00 (Teams)
[Book on ERP Learn](#)

Carer awareness: Identifying and supporting carers

This introductory session delivered by [VOCAL](#) aims to make carers more visible in the workplace and help those in senior positions reflect on the hidden impacts of caring, and how to identify and support unpaid carers in their organisation.

This session will explore how:

- to identify unpaid carers in the workplace
- to build an awareness of the impacts of caring and how this can affect carers at work
- employers can support carers who are working and the business benefits
- carer rights and underpinning legislation can better support carers in employment
- VOCAL can support working carers and employers.

The session will be interactive with opportunities to ask questions along the way.

*This training opportunity is part of **Heriot-Watt's Bronze Athena Swan Action Plan** and is being leveraged by the **MACS Silver Athena Swan Action Plan**.*





And finally



Share Your Story – Help Us Celebrate Equality, Diversity & Inclusion

From flexible working to mentoring programmes, we'd love to hear your experience.

Complete our short form to inspire others.



If you have suggestions or questions related to Athena SWAN, or an event that you would like to advertise, then please send them to us via athena-macs@hw.ac.uk. In addition, if you would like to be part of the MACS Athena SWAN Team (a.k.a. the Self-Assessment Team (SAT)) then please do get in touch.



*Audrey Repetti and Andrew Ireland
(MACS Athena Swan Coordinators)*

