

Education

- **PhD in Computer Science, Heriot-Watt University** 📍 *Edinburgh, UK*
Oct 2019 – Apr 2025 | Natural Language Processing and Robotics | **Skills:** Machine Learning, Python, Torch, HuggingFace

Thesis: *Learning to Handle Miscommunication in Multi-modal Conversational AI*

Focused on miscommunications arising from **ambiguity in situated dialogues**, with industry partner **Siemens**. I developed vision and language models to identify and resolve ambiguous coreferences [4], and investigated how transformer model architectures influence properties used to **resolve coreferences**, such as colours or positions [3]. I also recently released a dataset collected via crowdsourcing [6] and benchmark, where I **trained and evaluated generative VLLMs** on context-dependent ambiguities in simulated environments [2].

Relevant topics:

- › Vision and language generative models for dialogue and instruction understanding.
- › Repairing miscommunication and ambiguity in dialogues.
- › Grounding language to objects in situated environments.
- › Natural language and human-robot collaboration in real-world scenarios.

- **MEng in Software Engineering, Heriot-Watt University** 📍 *Edinburgh, UK*
Sep 2014 – May 2019 | First-class degree with Distinction

Thesis: In collaboration with industry partner **SeeByte**, the thesis explored the behaviour of autonomous vehicles through an agent using natural language on-demand. The agent was able to explain why the vehicles were doing an action (or why not) and combined many areas such as dialogue, monitoring, and reasoning.

- › Two peer-reviewed conference publications from thesis, several more from collaborations.
- › Several prizes per year (including **best thesis** and **top student**).

Relevant courses: Conversational Agents and Dialogue Systems, Data Mining and Machine Learning, Robotics and Intelligent Agents, Interaction Design, Artificial Intelligence, Database Management Systems, High-performance and Parallel Computing, Industrial Programming.

Work Experience

- **Applied Scientist Intern, Amazon Alexa AI** 📍 *Washington, DC, USA*
Jan 2023 – Jun 2023 | **Skills:** AWS, Machine Learning, Python, Torch, LLMs, Transformers, In-Context Learning




As part of the Alexa AI SocialBot team, I developed a novel personalisation approach for instruction-tuned LLMs. It enabled models to make user-specific predictions without individual model training.

- › Led to a peer-reviewed publication [1] describing the in-context learning adaptation method.









- **Research Assistant, Heriot-Watt University** 📍 *Edinburgh, UK*
Jul 2019 – Dec 2019 | **Skills:** Python, Amazon MTurk, User study, Language modelling, JavaScript, Gazebo, ROS

Carried out a large-scale crowd-sourced data collection using a novel dialogue interface to interact with robots on an offshore platform. I led the development of the graphical interface, the simulated human-robot interaction, and the collection platform structure, publishing several peer-reviewed papers.

Work Experience (continued)

- **Software Developer Intern, SeeByte Ltd**  *Edinburgh, UK*
Jun 2018 – Dec 2018 | **Skills:** C++, OpenCV, Java, ROS, High-performance coding, Real-time processing
Working on a project to monitor underwater autonomous vehicles using augmented reality. I designed and coded a cross-platform program that connected to the vehicles and displayed them through a camera at their real-world GPS location.
- **Research Assistant, Heriot-Watt University**  *Edinburgh, UK*
Jun 2017 – Sep 2017 | **Skills:** Python, JavaScript, SQL, PHP
Funded by the UK's Ministry of Defence (MoD) and collaborating with industry (SeeByte and Tekever), the project developed MIRIAM, a multimodal interface for autonomous systems. This interface enables operators to interrogate vehicles using speech or text about their actions or status.
I led the work on the system's conversational capabilities: natural language processing (parsing, intent recognition and speech recognition), generation (responses, text-to-speech) and dialogue management.
 - Resulted in multiple peer-reviewed publications and collaborations.
 - Carried out human studies with vehicles in real-world environments.
 - Delivered presentations and system demos to the MoD and other stakeholders.
- **Various Teacher Assistant Roles, Heriot-Watt University**  *Edinburgh, UK*
Sep 2017 – May 2024 | Teaching months only
Mentored students and graded university coursework and exams for several graduate and undergraduate courses: Artificial Intelligence and Intelligent Agents (Year 3/MSc), Conversational Agents and Dialogue Systems (Year 4/MSc), Language Processors (Year 3) and Software Development 1 & 2 (Year 1).

Other Highlights and Awards

-  Co-organisier of YRRSDS 2022 and 2023 Workshops.
-  **Best Short Paper Award** at SIGDIAL 2023.
-  Computer Science PhD Representative for the university department (2021/2022).
-  Interviewed for the **Robot Talk Podcast** on Human-Robot Collaboration in 2021.
-  **British Computer Society Prize** 2019 for best student in MEng, The British Computer Society and Heriot-Watt.
-  Invited to the **Schloss Dagstuhl** 2019 GI Seminar on Explainable Software for Cyber-Physical Systems.
-  Finalist for the **Young Software Engineer of the Year** Award 2018 for top thesis in Scotland, ScotlandIS.
-  **Cooper-Walker Engineering Prize** 2018 for top student in Computer Science, Heriot-Watt University.

Skills

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|------------------|---|---|
| Machine Learning | ➤ | Daily use of libraries: PyTorch, PyTorch Lightning, Weight and Biases, TensorFlow. |
| NLP Resources | ➤ | Wide knowledge of HuggingFace, pre-trained models, transformers, SpaCy, NLTK... |
| Programming | ➤ | Strong proficiency with Python, C++, Java, JavaScript, PHP and others (C, C#, SML). |
| Coding Tools | ➤ | Strong knowledge of Git, GitHub, CMake, OpenCV, Anaconda, Unity, React, SQL... |
| Robotics | ➤ | Familiar with ROS, Gazebo simulator, PDDL, YARP, sensor communications... |
| Languages | ➤ | Academic-level reading, writing and speaking competencies in English and Spanish. |
| Research | ➤ | Strong skills in user studies and human-agent interaction through natural language. |

Notable Research Publications

Full list of publications and more information available at <https://jchiyah.github.io/publications>

- 1 **Chiyah-Garcia, Javier**, Praseon Goyal, Michael Johnston, and Reza Ghanadan (2024). *Adapting LLM Predictions in In-Context Learning with Data Priors*. In: CustomNLP4U at EMNLP'24.
- 2 **Chiyah-Garcia, Javier**, Alessandro Suglia, and Arash Eshghi (2024). *Repairs in a Block World: A New Benchmark for Handling User Corrections with Multi-Modal Language Models*. In: EMNLP'24.
- 3 **Chiyah-Garcia, Javier**, Alessandro Suglia, Arash Eshghi, and Helen Hastie (2023). *'What are you referring to?' Evaluating the Ability of Multi-Modal Dialogue Models to Process Clarificational Exchanges*. In: SIGDIAL'23.
🏆 Best Short Paper Award.
- 4 **Chiyah-Garcia, Javier**, Alessandro Suglia, José David Lopes, Arash Eshghi, and Helen Hastie (2022). *Exploring Multi-Modal Representations for Ambiguity Detection & Coreference Resolution in the SIMMC 2.0 Challenge*. In: DSTC10 Workshop at AAAI 2022.
- 5 **Chiyah Garcia, Francisco J.**, Simón C. Smith, José Lopes, Subramanian Ramamoorthy, and Helen Hastie (2021). *Self-Explainable Robots in Remote Environments*. In: HRI '21 Companion.
- 6 **Chiyah Garcia, Francisco J.**, José Lopes, Xingkun Liu, and Helen Hastie (2020). *CRWIZ: A Framework for Crowdsourcing Real-Time Wizard-of-Oz Dialogues*. In: LREC '20.
- 7 Lopes, José, **Francisco J. Chiyah Garcia**, and Helen Hastie (2020). *The Lab vs The Crowd: An Investigation into Data Quality for Neural Dialogue Models*. In: Workshop on Human in the Loop Dialogue Systems at NeurIPS 2020.
- 8 Blumreiter, Mathias, Joel Greenyer, **Francisco Javier Chiyah Garcia**, Verena Klös, Maike Schwammberger, Christoph Sommer, Andreas Vogelsang, and Andreas Wortmann (2019). *Towards Self-Explainable Cyber-Physical Systems*. In: MODELS-C '19.
- 9 **Chiyah Garcia, Francisco J.**, David A. Robb, Atanas Laskov, Xingkun Liu, Pedro Patron, and Helen Hastie (2018). *Explainable Autonomy: A Study of Explanation Styles for Building Clear Mental Models*. In: INLG'18.
- 10 **Chiyah Garcia, Francisco J.**, David A. Robb, Xingkun Liu, Atanas Laskov, Patron Patron, and Helen Hastie (2018). *Explain Yourself: A Natural Language Interface for Scrutable Autonomous Robots*. In: HRI'18.
- 11 Hastie, Helen, **Francisco J. Chiyah Garcia**, David A. Robb, Pedro Patron, and Atanas Laskov (2018). *MIRIAM: A Multimodal Interface for Explaining the Reasoning Behind Actions of Remote Autonomous Systems*. In: ICMI'18.

Editor of the following proceedings:

- 12 *Proceedings of the 19th Annual Meeting of the Young Researchers' Roundtable on Spoken Dialogue Systems (2023)*. YRRSDS'23 Workshop.