# Javier Chiyah-Garcia | CV

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Javier Chiyah-Garcia


PhD in Conversational AI with expertise in Generative AI, LLMs and multi-modal systems, specifically in ambiguity resolution and language grounding. Proven ability to lead ideas to publications (EMNLP, SIGDIAL, INLG) and impactful industry collaborations (Amazon, Siemens, SeeByte), translating complex AI research into practical applications.

## 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], grounding language in visual attributes, 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 and expertise:

  - Vision and language generative models for dialogue and instruction understanding.
  - Repairing miscommunication and ambiguity in dialogues.
  - Grounding language to objects in situated and embodied 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, I developed a dialogue agent to explain the behaviour of autonomous vehicles on-demand. The agent could explain why the vehicles were executing action (or why not) during a remote mission, combining many areas of expertise such as dialogue, monitoring and reasoning.

  - Two peer-reviewed conference publications from thesis, several more from collaborations.
  - Multiple awards, including best thesis, top student and Scottish Young Software Eng. Award runner-up.

## 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 led the development and implementation of a novel personalisation approach for instruction-tuned LLMs, enabling user-specific predictions without individual model re-training.

  - Successfully leveraged large-scale computing resources to improve predictions across LLMs and datasets.
  - Resulted in a peer-reviewed publication [1] describing the in-context learning adaptation technique.

- **Research Assistant**, **Heriot-Watt University** — *Edinburgh, UK*

  Jul 2019 – Dec 2019 | **Skills:** Python, Amazon MTurk, User Study, Language Modelling, JavaScript, Gazebo, ROS

  Led a large-scale crowd-sourced data collection using a novel dialogue interface to gather data on human-robot interaction in simulated environments. I led the development of the interface, the real-time human-robot interaction and the collection platform, publishing several peer-reviewed papers on the model training and data analysis.

## Work Experience (continued)

- **Software Developer Intern**, **SeeByte Ltd** — *Edinburgh, UK*
  Jun 2018 – Dec 2018 | **Skills:** C++, OpenCV, Java, ROS, Android, Linux, High-performance computing

  Designed and engineered an augmented reality system for monitoring underwater autonomous vehicles on a live camera feed, visualising their real-world GPS locations and aiding their retrieval.

- **Research Assistant**, **Heriot-Watt University** — *Edinburgh, UK*
  Jun 2017 – Sep 2017 | **Skills:** Python, JavaScript, SQL, PHP, User Study

  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 by interpreting complex real-time sensor data.

  Led the design and implementation of 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 and graded coursework/exams for graduate and undergraduate courses: AI & Intelligent Agents (Yr3/MSc), Conversational Agents & Dialogue Systems (Yr4/MSc), Language Processors (Yr3), Software Dev 1&2 (Yr1).

## Other Highlights and Awards

- Co-organiser 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 | PyTorch (Lightning), LLMs (Fine-tuning, RLHF, ICL), Deep Learning, Transformers. |
| NLP & Dialogue | Dialogue Management, Grounding, HuggingFace (Transformers, Datasets), spaCy, NLTK. |
| Multi-Modal AI | Vision+Language Models, Coreference/Ambiguity Resolution, Embodied Agents. |
| Programming | Python (Expert), proficient with C++, Java, JavaScript, PHP, C, C#. |
| Tools & Platforms | Git, GitHub, Docker, AWS, Weights & Biases, Anaconda, Unity, Linux/Bash. |
| Core CS Concepts | Algorithms & Data Structures, Data Mining, High-Performance Computing, Industrial Prog. |
| Research Methods | Experimental Design, User Studies, Data Collection & Analysis, ML/NLP Evaluation. |
| Languages | Academic-level reading, writing and speaking competencies in English and Spanish. |

Professional and academic references available

## Notable Research Publications

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

1. **Chiyah-Garcia, Javier**, Prasoon 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 Reseachers' Roundtable on Spoken Dialogue Systems* (2023). YRRSDS'23 Workshop.