Yanchao Yu
Lecturer (Assistant Professor)

in linkedin.com/in/yanchao-yu-943817116   **%** https://yanchao-yu.netlify.app/
☐ +44 07521 521986   **@** y.yu@napier.ac.uk
♥ Edinburgh Napier University (Merchiston Campus), 10 Colinton Road, Edinburgh EH10 5DT
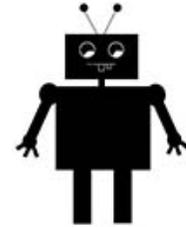
I am currently working as a Research Associate at Heriot-Watt University, focusing on Dialogue Systems, Multi-modal Interaction, Human-Robot Interaction. I am also working as an NLP software engineer at a conversational AI company (called Alana), applying state-of-the-art techniques to design and build task-oriented/social conversational systems for business clients.

My principal research interests lie in Human-Robot interaction through daily, spontaneous conversation in Natural Language, mainly focusing on Visual Language Grounding, for example, multi-modal learning/tutoring conversations. On the other hand, my interests also lie in a wide range of state-of-the-art technologies (e.g. neural network) to solve realistic problems, for example, incremental dialogue system, multi-party conversations and open-domain social conversations.

💼 EDUCATIONAL EXPERIENCE

November 2014 November 2018	**Ph.D, HERIOT-WATT UNIVERSITY, UK**
	Ph.D thesis : Optimising Strategies for Learning Visually-grounded Word Meanings Through Interaction
	Spoken Dialog System · Visual-Language Grounding · Multi-modal Interaction · Python · Reinforcement Learning

September 2012 November 2013	**MSc in Software Engineering, HERIOT-WATT UNIVERSITY, UK**
	Grade : Distinction - GPA 77%
	Graduation Project : Siri 2 : Conversational Speech Interfaces on Mobile Devices
	Spoken Dialog System · VoiceXML · JAVA · Android · Google Speech API

September 2007 July 2011	**BSc in Computer Science and Technology, BEIJING INFORMATION SCIENCE & TECHNOLOGY UNIVERSITY, China**
	Grade : 75% (1st Class)
	Graduation Project : Online Examination System using Pattern Recognition
	C# · MySQL · Patter Recognition · Miro-Service

💼 PROFESSIONAL EXPERIENCE

August 2021 Present	**Lecturer, EDINBURGH NAPIER UNIVERSITY, UK**
	Natural Language Processing · Conversational AI · Multi-modal Interaction · Multi-party Interaction

March 2020 July 2021	**Research Associate, HERIOT-WATT UNIVERSITY, UK**
	Working as a member in the SPRING project :
	> Leading the deliverable 5.1 to design and develop the initial conversational system that combines social and visual dialogue;
	> Exploring potential research directions and review the relevant literature;
	> Designing data collection and evaluations;
	> Designing and developing any new Neural Network models to solve the research problems (e.g. multi-user conversation and multimodal interaction)
	> Writing and submitting research papers on system results to academic conferences, workshops or journals
	> Contributing to the demonstration of conversational systems in the conference, workshops, and other public engagement events
	Conversational AI · Python · Docker · MongoDB · Python · Rasa · Multi-modal Interaction · Multi-party Interaction

June 2020 July 2021	**NLP Researcher	Software Engineer, ALANA, UK**
	> Developing the state-of-the-art conversational models for various projects;
	> Researching and designing new Machine/Deep Learning models for different practical problems (e.g. multi-user conversation, multimodal interaction and open-domain question-answering);
	> Helping design and implement software deployment pipeline and testing portals.
	Conversational AI · Docker · MongoDB · Python · Java · Multi-modal Interaction

May 2018
March 2020
	Dialogue Modelling Scientist, Voysis Ltd, UK
	Lead the research and development of conversational AI in the field of e-commerce, including :
	   › Improving the existing dialogue system by applying state- of-the-art techniques in the domain ;
	   › Designing and developing the new machine/deep learning models to solve the practical problems encountered in the industrial environment ;
	   › Training colleagues on the knowledge of conversational AI ;
	Participate in the employment recruitment in conventional agent :
	   › Design the interview agenda and questions
	   › Perform as interviewer for new possible employees
	   › Lead the post-interview discussion
	(Apple has purchased Voysis in early 2020.)
	
	Conversational AI Docker MongoDB Python Java

October 2013
May 2018
	Research Assistant | Research Associate, Heriot-Watt University, UK
	Working on various EU projects. (e.g. the EU FP7 "Parlance", the EPSRC IAA "SpeechCity" and the EPSRC project "Babble") in collaboration with other PhD students, postdoctoral researchers and professors.
	   › Developing conversational systems for different projects ;
	   › Designing the state-of-the-art machine/deep learning model to address the encountered problems in projects ;
	   › Designing data collection and evaluations ;
	   › Publishing research papers in various academic conferences ;
	   › Contribute to demonstration of conversational systems in the conferences, workshops, and other public engagement events ;
	Conversational AI Python Python Android Multi-modal Interaction

January 2009 April 2009	**Cisco Network Engineer (Internship), Beijing Hengxin Yongtai Technology Development Co., Ltd., China** › Assisted with designing and building the network topology diagram Cisco Network
Jun 2008 December 2008	**C# Software Developer (Part-time), Institute of Geology and Geophysics, Chinese Academy of Sciences, China** › Implement several professional analysis software systems to process data in geophysical prospecting. C# MySQL

🎓 Teaching and Mentoring Experience

January 2021
April 2021
	Conversational Agent, Heirot-Watt University, UK
	Co-supervising student group projects in the course of Conversational Agent :
	   › Student Group Project in **"Visual Dialogue"** :
	      › Co-supervising with Dr. Christian Dondrup
	      › 7 MSc students
	      › Supervision meeting online (via *TEAMS*) once a week
	   › Student Group Project in **"Ice-breaker Multi-user Conversation"** :
	      › Co-supervising with Dr. Jose David Aguas Lopes
	      › 8 MSc students
	      › Supervision meeting online (via *TEAMS*) once a week
	      › Submitted a demo paper to Conversational User interfaces (CUI) 2021
	Conversational AI Rasa Multi-modal Conversation Multi-User Conversation

April 2016 August 2016	**Graduation Project, Heirot-Watt University, UK** Assisting and supervising a fourth-year student (Martin Ross) on using the Furhat robot Java Furhat Robot

September 2015
December 2016
	Lab-helper for BSc and MSc courses, Heirot-Watt University, UK
	Help BSc and MSc students with understanding their laboratory tasks and technique support, including Software development 2 in 2015 and Software Engineering Foundation in 2016
	  > around 50 BSc and MSc students
	  > Once a week
	Java

October 2019
November 2019
	Internal Training course on Conversational AI, Voysis Ltd, UK
	Lead an internal Training course on Conversational AI (e.g. the classic architecture, state-of-the-art technique and evaluation metrics for Dialogue Management)
	  > All company technique employees (around 20 people)
	  > Two weeks (one hour per week)
	Dialogue System Python

October 2010
December 2010
	Graduate Teaching Assistant, Beijing Information Science & Technology University, China
	Team-teaching of **Software Engineering** undergraduate course
	  > Both class and lab teaching responsibilities
	  > Develop in-class activities
	  > Lead the discussion section
	  > Develop assignments
	  > Around 30 2nd-year undergraduate students
	  > Two hours per week
	Java MySQL

🎓 Research Experience

March 2020 Present	Member of the SPRING Project, Heirot-Watt University, EU H2020-ICT research and innovation action (RIA) **Project Description :** A three-year research project that design and build a conversational AI for human-robot interaction in healthcare > Leading the Deliverable 5.1 in the project to design and build an initial social and visual conversational system and an initial high- level task planner **Achievement :** published two conferences papers in HRI and submitted a demonstration paper at an international conference (ACL 2021) Conversational AI Multi-modal Conversation Multi-party conversation Deep Neural Network
November 2017 May 2018	Member of the Voysis Project, Heirot-Watt University, Industry-funded **Project Description :** An industry-driven research project aims at design and build an agenda-based user simulation and a conversational agent in the e-commerce domain. **Achievement :** The developed model/system have been employed in the final production systems and demonstrations for business clients. Conversational AI Python Reinforcement Learning
January 2017 November 2017	Member of the Amazon Challenge 2017, Heirot-Watt University, Industry-funded **Project Description :** A competition student project aims to design and build a social open-domain conversation agent, i.e. interacting and being evaluated with the general public. **Award :** Be selected to participate in the Amazon Alexa Challenge (note that there are only 12 teams selected out of more than 100 applicants) and finally be selected as one of the top three teams in the final competition in November 2017. Conversational AI Python Reinforcement Learning

April 2015 November 2017	Member & Ph.D of the Babble Project, HEIROT-WATT UNIVERSITY, EPSRC Website : Babble URL Project Description : A research project that aims to explore/design the foundations and impetus for the rapid development of naturally interactive conversational interfaces with deep language understanding in various of areas. Achievement : Built a modular interactive teachable system that addresses visual language grounding problem through natural, daily conversations. Conversational AI Incremental Natural Language Understanding Dynamic Syntax Type Theory with Records Visual Language Grounding Reinforcement Learning
March 2014 October 2014	Member of the SpeechCity Project, HEIROT-WATT UNIVERSITY, EPSRC Project Description : A research project that aims to build an adaptive spoken interaction for an intelligent city guide Award : Won the Culture and Sports Challenge in the EdinburghApps competition, 2014. Conversational AI Java Andriod Multi-task conversation
October 2013 February 2015	Member of the Parlance Project, HEIROT-WATT UNIVERSITY, FP7 EC-funded Project Description : A research project aims at designing and building a mobile application that approaches human performance in conversational interaction. Achievement : The developed mobile-based conversational application was published for the public in the Google Play app store. Conversational AI Java Andriod

🎓 HONORS AND AWARDS

November 2017	As the team member, our team is the only team from the UK to be chosen as one of three finalists in Amazon's Alexa Prize.
June 2017	The paper "Learning how to learn : an adaptive dialogue agent for incrementally learning visually grounded word meanings" won the **Best Paper Award** in the first ACL workshop of "Language Grounding for Robotics".
2014	Our SpeechCity mobile-based virtual tourism guider won the Culture and Sports Challenge in the EdinburghApps competition.

📖 PUBLICATIONS

2014	> Verena Rieser, Srinivasan Janarthanam, Andy Taylor, Yanchao Yu and Oliver Lemon : "**SpeechCity : A Conversational City Guide based on Open Data**". In : 18th Workshop on the Semantics and Pragmatics of Dialogue (DialWatt) - Short Papers. Edinburgh, 2014. > Helen Hastie, Marie-aude Aufaure, Panos Alexopoulos, Hugues Bouchard, Heriberto Cuayahuitl, Nina Dethlefs, Milica Gasic, James Henderson, Oliver Lemon, Xingkun Liu, Peter Mika, Nesrine Ben Mustapha, Tim Potter, Verena Rieser, Blaise Thomson, Pirros Tsiakoulis, Yves Vanrompay, Boris Villazon-Terrazas, Majid Yazdani, Steve Young and Yanchao Yu. "**The PARLANCE mobile app for interactive search in English and Mandarin**". In : Proceedings of SigDial 2014. > Helen Hastie, Marie-Aude Aufaure, Panos Alexopoulos, Hughes Bouchard, Heriberto Cuayáhuitl, Nina Dethlefs, Milica Gasic, James Henderson, Oliver Lemon, Xingkun Liu, Peter Mika, Tim Potter, Verena Rieser, Pirros Tsiakoulis, Yves Vanrompay, Boris Villa-Terrazas, Majid Yazdani, Steve Young and Yanchao Yu. 2014. **Two Alternative Frameworks for Deploying Spoken Dialogue Systems to Mobile Platforms for Evaluation "in the Wild"**. Abstract paper in the Workshop on SemDial
2015	> Yanchao Yu, Oliver Lemon and Arash Eshghi, "**Interactive Learning through Dialogue for Multimodal Language Grounding**". In : Proceedings of SemDial 2015 > Yanchao Yu, Arash Eshghi and Oliver Lemon, "**Comparing attribute classifiers for interactive language grounding**", In Proceedings of the workshop on vision and language (VL'15)

2016
- Nina Dethlefs, Helen Hastie, Heriberto Cuayahuitl, Yanchao Yu, Verena Rieser, and Oliver Lemon, "Information Density and Overlap in Spoken Dialogue". Computer Speech and Language, 37, 82-97, 2016
- Yanchao Yu, Oliver Lemon and Arash Eshghi, "Comparing dialogue strategies for learning grounded language from human tutors", In Proceedings of the Twentieth Workshop on Semantics and Pragmatics of Dialogue (SEMDIAL), New Jersey, 2016
- Yanchao Yu, Arash Eshghi, and Oliver Lemon, "An Incremental Dialogue System for Learning Visually Grounded Language", In Proceedings of the Twentieth Workshop on Semantics and Pragmatics of Dialogue (SEMDIAL), New Jersey, 2016 (demonstration system)
- Yanchao Yu, Oliver Lemon and Arash Eshghi, "Interactive Learning of Visually Grounded Word Meanings from a Human Tutor". In Proceedings of the Fifth ACL workshop on Vision and Language (VL'16), Berlin, 2016.
- Yanchao Yu, Oliver Lemon and Arash Eshghi. "Training an adaptive dialogue policy for interactive learning of visually grounded word meanings". In Proceedings of The Seventeenth Annual SIGDial Meeting on Discourse and Dialogue (SIGDial), Los Angeles, 2016.
- Arash Eshghi, Yanchao Yu and Oliver Lemon, "Incremental Generation of Visually Grounded Language in Dialogue (demonstration system)". In Proceedings of The International Natural Language Generation Conference (INLG), Edinburgh, 2016.
- Oliver Lemon, Arash Eshghi, and Yanchao Yu, "Learning how to learn : grounding word meanings through conversation with humans", Machine Intelligence - Human-Like Computing (MI20-HLC), 2016

2017
- Yanchao Yu, Arash Eshghi, Gregory Mills and Oliver Lemon, "The BURCHAK corpus : a Challenge Data Set for Interactive Learning of Visually Grounded Word Meanings", In Proceedings of the Sixth EACL workshop on Vision and Language (VL'17), Valencia, 2017.
- Yanchao Yu, Arash Eshghi and Oliver Lemon. "Learning how to learn : an adaptive dialogue agent for incrementally learning visually grounded word meanings", In Proceedings of the First ACL workshop of "Language Grounding for Robotics", Vancouver, 2017. (BEST PAPER AWARD)
- Yanchao Yu, Arash Eshghi and Oliver Lemon, "VOILA : An Optimised Dialogue System for Interactively Learning Visually-Grounded Words Meanings (Demonstration System)", In Proceedings of the Eighteenth Annual SIGDial Meeting on Discourse and Dialogue (SIGDial), Saarbrücken, 2017.
- Ioannis Papaioannou, Amanda Cercas Curry, Jose L. Part, Igor Shalyminov, Xinnuo Xu, Yanchao Yu, Ondrej Dušek, Verena Rieser, Oliver Lemon. "An Ensemble Model with Ranking for Social Dialogue". In : NIPS workshop on Conversational AI : Today's Practice and Tomorrow's Potential, Long Beach, USA, 2017.
- Ioannis Papaioannou, Amanda Cercas Curry, Jose L. Part, Igor Shalyminov, Xinnuo Xu, Yanchao Yu, Ondrej Dušek, Verena Rieser, Oliver Lemon. "Alana : Social Dialogue using an Ensemble Model and a Ranker trained on User Feedback". In : AWS re : INVENT, Las Vegas, 2017.

2018
- Yanchao Yu, Arash Eshghi and Oliver Lemon, "An Incremental Dialogue System for Learning Visually Grounded Word Meanings (demonstration system)", Proc. Dialogue and Perception, 2018
- Yanchao Yu, "Optimising Strategies for Learning Visually-grounded Word Meanings Through Interaction", PhD thesis, 2018
- Andrea Vanzo, Jose Luis Part, Yanchao Yu, and Oliver Lemon. "Incrementally Learning Semantic Attributes through Dialogue Interaction", 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS '18), Stockholm, 2018.

2020
- Daniel Hernandez Garcia, Yanchao Yu, Weronika Sieinska, Jose Part, Nancie Gunson, Oliver Lemon and Christian Dondrup. "Explainable Representations of the Social State : A Model for Social Human-Robot Interactions" AAAI Fall Symposium on AI for HRI, 2020
- Angus Addlesee, Yanchao Yu, Arash Eshghi, "A Comprehensive Evaluation of Incremental Speech Recognition and Diarization for Conversational AI", COLING 2020

2021
- Jose Part, Daniel Hernandez-Garcia, Yanchao Yu, Nancie Gunson, Christian Dondrup, Oliver Lemon "Towards Visual Dialogue for Human-Robot Interaction", Human-Robot Interaction (HRI 2021)

Submitted	> Yanchao Yu, Daniel Hernandez-Garcia, Jose Part, Nancie Gunson, Weronika Sieinska, Christian Dondrup, Oliver Lemon. "Combining Visual and Social Dialogue for Human-Robot Interaction (Demonstration System)", ACL 2021
	> Nancie Gunson, Weronika Sieinska, Yanchao Yu, Daniel Hernandez-Garcia, Jose Part, Christian Dondrup and Oliver Lemon. "Coronabot : A Conversational AI System for Tackling Misinformation", 2021 ACM International Conference on Information Technology for Social Good (GoodIT 2021)
Preparing	> Yanchao Yu, "Adaptive Searching Strategy : Learning to Ask with a generic User Preference Model in Realistic Environment", *prepare to be submitted to* ECNLP(ACL) 2021

🎓 PRESENTATIONS

Oral	> **2019 October** – Internal Training at Voysis ltd. UK, Dublin, Ireland
	> **2018 December** – SICSA workshop on Conversational AI, December
	> **2017 June** – the First ACL workshop of "Language Grounding for Robotics", Vancouver, Canada
	> **2017 April** – the Sixth EACL workshop on Vision and Language (VL'17), Valencia, Spain
	> **2016 October** – Demonstrations for the Furhat Robot in the activity of TED Talks Education at Heriot-Watt University
	> **2016 September** – SigDial Conference, University of South California, Los Angeles, US
	> **2016 July** – SemDial Conference, Rutgers University, New Jersey, US

Invited	> **2020 October** – "Visual Language Grounding through Natural Language Conversation", MediaTeK ltd., Cambridge, UK
	> **2017 August** – "VOILA : An Optimised Dialogue System for Interactively Learning Visually-Grounded Words Meaning", Voysis ltd., Dublin, Ireland
	> **2017 June** – "Learning how to learn : an adaptive dialogue agent for incrementally learning visually grounded word meaning", Mulubaa, Canada

Poster	> **2018 July** – 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS '18), Stockholm, Sweden
	> **2017 September** – 18th Annual SIGDial Meeting on Discourse and Dialogue (SIGDial), Saarbrücken
	> **2017 June** – 1st ACL workshop of "Language Grounding for Robotics", Vancouver, Canada
	> **2016 September** – The International Natural Language Generation Conference (INLG), Edinburgh, UK
	> **2016 September** – 5th ACL workshop on Vision and Language (VL'16), Berlin, Germany.
	> **2015 September** – 4th Workshop on Vision and Language 2015 (VL'15), Lisbon, Portugal
	> **2015 September** – 19th Workshop on the Semantics and Pragmatics of Dialogue (goDial), Gothenburg, Sweden
	> **2014 September** – 18th Workshop on the Semantics and Pragmatics of Dialogue (DialWatt), Edinburgh

☰ SKILLS

Programmation	Java (**JEE**, **JSE**, JME, Java Card Platform), Microsoft .Net (**C#**), **Typescript**, **Javascript**, **CSS**, Python
, Frameworks/Platform	Micro-service Framework, **Docker**, **Jenkins**
Database	IBM DB2, Oracle Database, Microsoft SQL Server, **MySQL**, **MongoDB**
Development Toolkit	**IntelliJ Idea**, **Eclipse**, Visual Studio Code, Maven, Ant, SVN, **Git**
Neural Network Platform	**Tensorflow**, **Torch**
Machine Learning Platform for NLP	**Transformer**, **Rasa**, PolyAI, AllenNLP, **SpaCy**, **NLTK**, **CoreNLP**

➕ LANGUAGES

Mandarin ●●●●●
English ●●●●○

➕ INTERESTS

> Magic,
> Balls (Basket Ball, Football, Golf, Volley Ball and Squash),
> Other Sports (Swimming, Hiking and Cycling, Fishing)
> Reading Fictions

❝ REFERENCES

Prof. Oliver Lemon
Professor
MACS, Heriot-Watt University
@ o.lemon@hw.ac.uk

Dr. Arash Eshghi
Assistant Professor
MACS, Heriot-Watt University
@ A.Eshghi@hw.ac.uk

Dr. Christian Dondrup
Assistant Professor
MACS, Heriot-Watt University
@ C.Dondrup@hw.ac.uk