ZHILIANG XIANG

Research Assitant at IROHMS | MSc Advanced Computer Science Student at Cardiff University

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EDUCATION

- M.Sc. in Advanced Computer Science

  Cardiff University

  Since Oct 2020 Cardiff, Wales

  - Knowledge Representation — Distinction
  - Principles of Machine Learning (ML) — Distinction
  - Applications of ML (NLP) — Distinction
  - Programming Paradigms — Distinction
  - Automated Reasoning — Additional

- B.Sc. in Information and Computation Science

  Guangxi University of Science and Technology

  Sept 2011 – Sept 2015 Guangxi, China

  - Mathematics: Analysis, Algebra, Discrete Math, Probability, Statistics
  - Programming: C++/Java Programming, Data Structure, DB Management
  - Computation: Optimisation, Data Mining, Computational Intelligence

PUBLICATIONS

Conference Proceedings

- Hu, Z., V. Gutierrez-Basulto, **Z. Xiang**, X. Li, R. Li, and J. Z. Pan (2022). "Type-aware Embeddings for Multi-Hop Reasoning over Knowledge Graphs". In: *IJCAI-ECAI 2022*, p. 10.
- Available at: `https://krr-cu.github.io/static/files/TEMP_IJCAI_2022_camera_ready.pdf`

RESEARCH PROJECTS

Declarative Entity Resolution via Answer Set Programming

Joint with the LaBRI, Université de Bordeaux

Ongoing

- Developing an Answer Set Programming (ASP) implementation of a declarative framework for collective entity resolution in relational databases
- Keywords: Data Cleaning, Entity Resolution, ASP, Reasoning under Constraints, Preference Relation in Logic Programming

Complex Query Answering with Knowledge Graph Embedding

Joint with the University of Edinburgh and Shanxi University

Ongoing

- Investigating query embeddings allowing to answer complex graph-like logical queries over incomplete knowledge graph
- Keywords: Knowledge Graph, Complex Query Answering, Query Embeddings, Representation Learning

OECD: AI and the Future of Skills

Joint with University of Leeds and Universitat Politècnica de València

Preparing for submission

ABOUT ME

Having studied a major with strong mathematical background equipped me with **maturity in mathematics**, 5 years of industrial experience enhanced my **hands-on ability in programming**, being emphasised in AI modules during MSc study provided me with solid foundation in both **theoretical** and **practical** aspects of **AI**. I believe that establishing provable correspondences between **logical representations** (reasoning) and **neural models** (learning) could be an effective approach to address **human-level intelligence**, therefore I am keen to explore both **knowledge representation and reasoning** and **machine learning**, and their **integrations**, in particular, **Neuro-symbolic Reasoning**, **Logic Programming**, **Representation Learning** and **Knowledge-based NLP**.

PRACTICAL SKILLS

Answer Set Programming ●●●●○
Currently using in ER project, dissertation

Python ●●●●○
Main language currently in use

Java ●●●●○
Main language during 5 years of back-end engineering experience

Other Languages: proficient) C#, SQL, JS, (familiar) Haskell, Perl, (knowledge of) C++

Pytorch ●●●○○
Currently using

KerasTensorFlow ●●○○○
Used in projects done as coursework

Scikit-learn ●●●○○
Used in projects done as coursework

Other: Git, Unix systems, Shell, Docker, Jenkins, LaTeX, relational databases, NoSQL, HPC server, Raspberry Pi

ACTIVITIES

- **EDBT-INTENDED Summer School 2022 (with Student Grant)**
- **Reasoning Web 2021 Summer School**
- **Cardiff KRR Research Group**
- **Cardiff NLP Research Group**
- **LoGaG Reading Group (Graph ML)**

- Investigating existing competitions and benchmarks for evaluating artificial intelligence systems regarding capabilities and generality
- Keywords: Benchmarking, Evaluation, Artificial Intelligence Capabilities Measuring

Neuro-symbolic approaches for Abstract and Relational Visual Reasoning Tasks

Master Dissertation

- Proposing a prototype leverages the integration of Deep Neural Networks and Probabilistic Logic Programming to solve Raven Progressive Matrix
- Keywords: Neural Probabilistic Logic Programming, Disentangled Representation Learning and Multi-task Learning

RESEARCH/WORK EXPERIENCE

Research Assistant (Placement)

Centre for Artificial Intelligence, Robotics and Human-Machine Systems (IROHMS) | Cardiff University

Nov 2021 - Now United Kingdom

- Conducting a research project regarding declarative framework for Entity Resolution task via Answer Set Programming under mentoring

Web GIS Development Engineer

Information Center of Nanning Bureau of Natural Resources

Nov 2018 - Aug 2020 China

- Lead a development project of a five-person team, assemble development plans and organise team tasks based upon web geographic information system (GIS) applications
- Design, implement, and maintain frameworks and functions for web GIS applications and web API

IT Product Manager

Shanghai Tongzhu Information Technology Co.,Ltd

Mar 2017 - Nov 2018 China

- Create assets to guide developments work (product requirement documents, user story mappings, stories for implementation etc.)
- Perform generally technical support, such as system integration with cooperative partners or other service providers and user training