Agnese CV Chiatti

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I am a **PhD Student** at the Knowledge Media Institute (the Open University, UK), working under the supervision of Prof. Enrico Motta and Dr. Enrico Daga. I hold a M.S. in Information Sciences and Technology (IST) from the Pennsylvania State University, where I have worked with Profs. Lee Giles, Nilam Ram and Prasenjit Mitra.

My research is currently focused on developing **hybrid solutions**, combining **Knowledge-driven technologies** with **Machine Learning,** to enhance the **Visual Intelligence** of **service robots**. You can find our more about this project here.

⬡ EDUCATION

2019 – Present   **PhD Student** at KMi (the Open University, UK)

Thesis *Advisors: Prof. Enrico Motta, Dr. Enrico Daga*

2016 – 2019   **MS** in Information Sciences and Technology at PSU

Thesis *Advisor: Prof. Prasenjit Mitra*

2012 – 2014   **MS** in Industrial Engineering and Management (IT minor) at Politecnico di Torino – Italy

Thesis Advisor: Prof. Tania Cerquitelli

2009 – 2012   **BS** in Industrial Engineering and Management (IT minor) at University of Bologna – Italy

WORK EXPERIENCE

June '18 – Sep '19	**Research Assistant** at KMI, the Open University, UK
Aug '16 – May'18	**Research and Teaching Assistant** at Penn State University
Jan '16 – Jun '16	Employee at Hera Group - **R&D – Innovation** - Italy
Jun'15 – Dec '15	Intern at Hera Group - **R&D – Innovation** - Italy
Feb '15 – Jun '15	Intern at CRIF - **Business Analyst, UK Market -** Italy
May '13 – Sep '13	Scholarship holder at Politecnico di Torino
	- **Open Access Office** – Italy

RESEARCH PROJECTS

- **(Oct 2019 - Present)** My PhD research is focused on contributing an epistemic framework to develop Visually Intelligent Agents (VIA). As part of this framework, I propose a methodology that leverages Deep Learning methods with Knowledge-based Reasoning, contributing to the growing field of Hybrid (or Neurosymbolic) Learning. Experimentally, I am testing the proposed methodology on robotic applications.

- **(June 2021 – Present)** With Dr. Enrico Daga, co-supervising a Cultural Heritage project, where Machine Learning and Semantic Knowledge are leveraged to transfer metadata annotations across two large-scale collections of artworks.

- **(June 2021 – Present)** Collaboration with AIRLab (Politecnico di Milano, Italy) to participate to the 2021 Smart Cities Robotics Challenge (SciRoc)

- **(June- Sept 2019)** I was part of the organising team for the 1st edition of the Smart Cities and Robotics (SciRoc) Challenge.

- **(June 2018 – Sept 2019)** My research at the Knowledge Media Institute (KMi - the Open University, UK), has been initially focused on object detection and recognition from Robot-collected RGB-Depth data, with Prof. Enrico Motta, Dr. Ilaria Tiddi and Dr. Emanuele Bastianelli as line managers.

- **(Oct- Nov 2018)** At KMi, I have also collaborated with Dr. Pinelopi Troullinou to the final evaluation phase of the Analytics for Everyday Learning (AFEL) EU project, aimed at investigating how users reach informal and collective learning through online platforms.

- **(2016- 2018)** During my first two years at Penn State, I have worked with Profs. Lee Giles (IST) and Nilam Ram (Human Development and Family Studies) at the Screenomics project, a collaboration with Stanford University. My work has been

- focused on implementing a Cloud-based infrastructure for text extraction and retrieval from digital screenshots (collected from individuals' laptops and smartphones).
- **(2016 - 2017)** I have collaborated with [Drs. Jian Wu](#) and [Sagnik Ray Chodhoury](#) in the development of a scientific domain knowledge entity extractor, implementing a hybrid approach (supervised + unsupervised).
- **(2015 – 2016)** While working for an energy multi-utility, I have been part of a pilot project on energy consumption mappings, in a Smart City scenario.
- **(Aug-Sept 2014)** Visiting Master student at Linköping University (Sweden) in the Division for Database and Information Techniques. This visiting experience was part of my Master Thesis development, advised by [Prof. Tania Cerquitelli](#) (Politecnico di Torino) and [Prof. Patrick Lambrix](#) (Linköping University).

PUBLICATIONS

⬡ Journal　　⬡ Conference　　⬡ Workshop

2021

⬡ **Chiatti, A.** Towards Visually Intelligent Agents (VIA): a Hybrid Approach. In Proceedings of the 2021 ESWC Conference – Satellite Events. PhD Symposium. Springer.

⬡ **Chiatti, A.**, Motta, E., Daga, E., and Bardaro, G. [Fit to Measure: Reasoning about Sizes for Robust Object Recognition.](#) In Proceedings of the 2021 AAAI Spring Symposia - Workshop on Combining Machine Learning and Knowledge Engineering (AAAI-MAKE 2021). CEUR.

2020

⬡ **Chiatti, A.**, Motta, E., and Daga, E. (2020) [Towards a Framework for Visual Intelligence in Service Robotics: Epistemic Requirements and Gap Analysis.](#) To appear in *Proceedings of the 17th International Conference on Principles of Knowledge Representation and Reasoning (KR 2020)*.

⬡ **Chiatti, A.**, Bardaro, G., Bastianelli, E., Tiddi, I., Mitra, P. and Motta, E. [Task-agnostic Object Recognition for Mobile Robots through Few-shot Image Matching.](#) 2020. *Electronics. Special Issue on Big Data Analytics for Smart Cities* .9(3), 380. MDPI.

2019

⬡ Reeves, B., Ram, N., Robinson, T.N., Cummings, J. J., Giles, L., Pan, J**., Chiatti, A**., Cho, M.J. et al. *Screenomics*: A Framework to Capture and Analyze Personal Life Experiences and the Ways that Technology Shapes Them. *Human Computer Interaction*.

Chiatti, A., Bardaro, G., Bastianelli, E., Tiddi, I., Mitra, P. and Motta, E. Exploring Task-agnostic, ShapeNet-based Object Recognition for Mobile Robots. In *Proceedings of the 3rd International workshop on Data Analytics solutions for Real-LIfe APplications (DARLI-AP 2019)*. CEUR.

Bardaro, G., Semprebon, A., **Chiatti, A.,** and Matteucci, M. From Models to Software Through Automatic Transformations: An AADL To ROS End-to-End Toolchain. In *Proceedings of the Third International Workshop on New Frontiers in Computational Robotics (NFCR '19)*. IEEE.

Hoque, MRU, Bradley, D., Kwan, C., **Chiatti, A.**, Li, J., and Wu, J. Searching for Evidence of Scientific News in Scholarly Big Data. In *Proceedings of the 10th International Conference on Knowledge Capture (K-CAP 2019)*. ACM.

2018

Chiatti, A., Cho, M. J., Gagneja, A., Yang, X., Brinberg, M., Roehrick, K., Choudhury, S. R., Ram, N., Reeves, B. and Giles, C. L. Text Extraction and Retrieval from Smartphone Screenshots: Building a Repository for Life in Media. In *Proceedings of the 33rd ACM/SIGAPP Symposium on Applied Computing (SAC 2018)*. Pau, France. April 9-13, 2018.

2017

Chiatti, A., Yang, X., Brinberg, M., Cho, M.J., Gagneja, A., Ram, N., Reeves, B., and Giles, C. L. Text Extraction from Smartphone Screenshots to Archive *in situ* Media Behavior. In *Proceedings of the 9th International Conference on Knowledge Capture (K-CAP 2017)*. Austin, TX, USA. December 4-6, 2017.

Wu, J., Choudhury, S.R., **Chiatti, A.**, Liang, C. and Giles, C. L. HESDK: A Hybrid Approach to Extracting Scientific Domain Knowledge Entities. In *Proceedings of the ACM/IEEE Joint Conference on Digital Libraries* (JCDL 2017). 241-244. Toronto, ON, Canada, June 19-23, 2017.

2015

Chiatti, A., Dragisic, Z., Cerquitelli, T. and Lambrix, P. Reducing the search space in ontology alignment using clustering techniques and topic identification. In *Proceedings of the 8th International Conference on Knowledge Capture* (K-CAP 2015). Palisades, NY, USA, October 7-10, 2015.

MENTORING & TEACHING

- **2021 Ongoing.** Co-supervisor of two visiting Bachelor Students from Amity University (India) on **applications of Deep Learning** and **Knowledge Engineering**

for **Cultural Heritage**.

- **2021 Ongoing.** Lead supervisor of a Year 12 student for the [KMi Summer Scholarship for Black Asian and Minority Groups (BAME)](#) on a 6-week project. The project is aimed at developing a system that can **capture RGB-Depth data through a sensor** to recommend the best workstation configurations (e.g., height of desk) for users.

- **(Oct 2020 - April 2021)** mentor of a visiting high school student on an Introductory project to **Machine Learning for Vision** and **Image Segmentation.**

- **(Spring 2018)** TA for Penn State IST 441 - specialty class on **Information Retrieval and Search Engines** offered to senior undergraduate and graduate students.

- **(Fall 2016)** TA for Penn State IST 210 **-** sophomore-level required class on **Organization of Data**.

TECHNICAL SKILLS

Object-oriented programming: Python (advanced level), Java + {Java in Android SDK}, R, Matlab, C++ (very basic level).

Image Processing: OpenCV (2D), Open3D (3D).

Machine Learning: Scikit-learn, Pytorch and Keras for Deep Learning.

Robotics: Robot Operating System (ROS), rosbag data/logs manipulation in Python.

Data Analysis: SQL (SQLServer), MongoDB, Excel VBA, MS Access, RapidMiner.

Geographic/Spatial Information Systems: PostGIS, PostGRESQL, Esri ArcGIS, QGIS.

Information Retrieval: Apache Solr + ElasticSearch Lucene, Heritrix (Web crawling).

Ontologies: RDF, OWL format, JSON for Linked data (JSON-LD).

Web Design: HTML, CSS, Django, SQL+PHP, Javascript

Cloud Systems: Google Cloud (storage, UNIX-based Virtual Machine setup and package installations), building Docker images for remote servers (CPU and GPU environments).

Functional testing: Selenium (Web) and SoapUI (A2A).

⬡ ORGANISATIONAL SKILLS

Co-host of the KMi Maven of the Month series, where top experts known internationally (i.e., mavens or conoisseurs) discuss broad sociotechnical topics with a diverse audience comprising members of staff and academics at the Open University.

Co-organiser of the 2021 OU PhD student conference, a yearly forum (internal to the Open University) for PhD students in KMi and the School of Computing and Communications to present their work.

Founder of KMi's AI club, a reading group and movie-watch party including students and staff from both KMi and the Open University.

⬡ PC MEMBERSHIPS/ REVIEWING

Program Committee member of the DARLI-AP workshop since 2018.

Journal reviewing: Information Systems Frontiers, Semantic Web Journal 2021 Special issues on Cultural Heritage and Deep Learning for Knowledge Graphs (DeepL4KGs).

Conference reviewing: ICDAR 2017, TheWebConf 2019, CIKM 2020, TheWebConf2021, CHI2021 (Late-Breaking Work track).

⬡ AWARDS AND SCHOLARSHIPS

Recipient of the Christine Collet EDBT/ICDT Student Participation Award to attend the 22nd International joint EDBT/ICTD conference, to be hold on March 25-29, 2019, in Lisbon, Portugal.

Selected to participate in the 2018 CRA-W Grad Cohort workshop on April 12-14, 2018 in San Francisco, CA.