Bereket Abera YILMA

COMPUTER SCIENCE · RESEARCH SCIENTIST

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Experience

Luxembourg Institute of Science and Technology (LIST)
Esch/Alzette, LUXEMBOURG

RESEARCH SCIENTIST: HUMAN-CENTRED AI FOCUSING ON **PERSONALIZATION** IN SMART INTERACTIVE ENVIRONMENTS:
Apr 2018 - Present

- Led research on **Machine learning and constrained Multi-Objective Optimization** to design personalized recommendation and guidance algorithms for the **National Gallery, London** as an extension of **CROSSCULT**, the European Union's **Horizon 2020** research and innovation programme.
- Led research on **Deep Reinforcement Learning** for Personalized adaptation in **Cobotics.**
- Supervised **Master's thesis** on Deep Learning based Visual Art Recommender System.
- Conduct literature reviews, design and implement algorithms, publish findings in Journals and Conferences, deliver talks and presentations.

Research Center for Automatic Control (CRAN)
Nancy, France

VISITING RESEARCHER:
July 2021 - Present

- Conduct research on **Deep Reinforcement Learning** in the context of Collaborative robotics (**Cobotics**).
- Co-supervise three **Master's thesis** projects in the intersection of **Personalization** and **Cobotics.**

Fondazione Bruno Kessler (FBK)
Trento, ITALY

RESEARCH ASSISTANT:
July 2017 - Mar 2018

- Worked on **NLP**, Data augmentation and training sequence models (using **Deep learning**) on Doctor-Patient conversational data for the **CoachAI** platform, a Health assisting **conversational Agent**.
- Designed and implemented a patient profiling and physical activity recommendation algorithms based on sensory data for **CoachAI.**
- Contributed in writing scientific publications.
- Developed food recognition and leftover estimation algorithms for daily diet monitoring by resorting **Computer vision and NLP**.

University of Trento
Trento, ITALY

RESEARCH ASSISTANT:
Sep 2016 - July 2017

- Worked on **Constructive Machine Learning** research for **Preference elicitation and preference learning.**
- Conduct literature reviews, collaborate with PhD students and postdocs in designing, implementing and evaluating several machine learning experiments.
- Developed a **Constructive Preference Elicitation algorithm** for a **Social Choice** tasks with Setwise Max-Margin Learning.

Education

University of Lorraine
Nancy, France

PH.D. IN AUTOMATIC, SIGNAL AND IMAGE PROCESSING, COMPUTER ENGINEERING
May 2018 - July 2021

University of Trento
Trento, ITALY

M.S. IN COMPUTER SCIENCE

SPECIALIZATION IN **Artificial Intelligence**: MACHINE LEARNING | BIG DATA AND SOCIAL NETWORKS ANALYSIS | DATA MINING
Sep 2015 - Dec 2017

University of Gondar
Gondar, ETHIOPIA

B.S. IN COMPUTER AND INFORMATION SCIENCE
Sep 2015 - Dec 2017

Technical Skills

LANGUAGES/TECHNOLOGIES:

- Python | Java | JavaScript | C++ | R **|** Tensorflow | PyTorch | Keras | Apache Spark/Hadoop | SPaCy | Plotly | ggplot | Dash | seaborn | matplotlib **|** GUROBI | PuLP **|** MySQL | PostgreSQL | Amazon DynamoDB | MongoDB | Amazon Neptune | Neo4j | IBM Watson

Selected Projects

MSARG : A MULTISTAKEHOLDER AWARE RECOMMENDATION SYSTEM

- **https://github.com/Bekyilma/Multi-Stakeholder-Recommendation**

WELD BREAK PREDICTION : A PREDICTIVE MAINTENANCE TOOL

- **https://github.com/Bekyilma/Weld-break-prediction**

ITEM2VEC : DISTRIBUTED REPRESENTATION BASED RECOMMENDER SYSTEM FOR E-MARKETS

- **https://github.com/Bekyilma/Recommendation-based-on-sequence**

VAR : Personalized Visual Art Recommender System

- **https://github.com/Bekyilma/Personalized-Visual-Art-Recommendation**

Master's Thesis : Constructive Social Choice With Setwise max-margin

- **https://github.com/Bekyilma/Master-thesis**

PhD Thesis :Personalisation in Cyber-Physical-Social Systems (CPSS)

- **https://bekyilma.github.io/PhD-thesis**

Professional Activities

Reviewing:

- Computing Journal
- Future Generation Computer Systems
- 3rd Black in AI Workshop at Neural Information Processing Systems (NeurIPS2019).
- 4th Black in AI Workshop at Neural Information Processing Systems (NeurIPS2020).
- 5th Black in AI Workshop at Neural Information Processing Systems (NeurIPS2021).

PC Member

- 1st International workshop on Business Informatics in Practice (BIiP2020)
- 4th Black in AI Workshop at Neural Information Processing Systems NeurIPS2020

Selected Publications

Journal Articles:

- **Bereket Abera Yilma**, Hervé Panetto, and Yannick Naudet."Systemic formalisation of Cyber-Physical-Social System (CPSS): A systematic literature review". In Computers in Industry, Volume 129 :103458, April 2021.
- **Bereket Abera Yilma**, Hervé Panetto, and Yannick Naudet."Personalisation in Cobotics: A CPSS perspective with Deep Reinforcement Learning". In Computers in Industry (Under Review)

International conferences:

- **Bereket Abera Yilma**, Yannick Naudet and Hervé Panetto." Towards a Personalisation Framework for Cyber-Physical-Social System (CPSS)". In the proceedings of the the17th IFAC Symposium on Information Control Problems in Manufacturing(INCOM2021), Budapest, Hungary(Virtual), June 2021.
- **Bereket Abera Yilma**, Yannick Naudet and Hervé Panetto." Personalisation in Cyber-Physical-Social Systems: A Multi-stakeholder aware Recommendation and Guidance", In the proceedings of the 29th ACM Conference on User Modeling, Adaptation and Personalization (UMAP '21), June 2021, Utrecht, Netherlands.
- **Bereket Abera Yilma**, Yannick Naudet and Hervé Panetto."A New Paradigm and Meta-Model for Cyber-Physical-Social Systems," In the proceedings of the 21st IFAC World Congress in Berlin, Germany, July 2020.
- **Bereket Abera Yilma**, Najib Aghanda, M. Romero, Yannick Naudet and Hervé Panetto."Personalised Visual Art Recommendation by Learning Latent Semantic Representations," In the proceedings of the 15th International Workshop on Semantic and Social Media Adaptation and Personalisation (SMAP 2020), Zakynthos, Greece(Virtual)October 2020.
- **Bereket Abera Yilma**, Hervé Panetto, and Yannick Naudet."A Meta-Model of Cyber-Physical-Social System: The CPSS paradigm to support Human-Machine collaboration in Industry 4.0," In the proceedings of the 20thWorking Conference on Virtual Enterprises (PRO-VE 2019), Turin, Italy, September 2019.
- **Bereket Abera Yilma**, Yannick Naudet and Hervé Panetto."Introduction to Personalisation in Cyber-Physical-Social Systems," In the proceedings of the 13th OTM/IFAC/IFIPInternational Workshop on Enterprise Integration, Interoperability and Networking(EI2N 2018)Valletta, Malta, October 2018.
- Yannick Naudet, **Bereket Abera Yilma** and Hervé Panetto."Personalisation in Cyber-Physical and Social Systems: the Case of Recommendations in Cultural HeritageSpaces," In the proceedings of the 13th International Workshop on Semantic and Social Media Adaptation and Personalisation (SMAP 2018)Zaragoza, Spain, September 2018.
- A Fadhil, G Schiavo, Y Wang, **Bereket Abera Yilma** "The effect of emojis when interacting with conversational interface assisted health coaching system," In the proceedings of the 12th EAI International Conference on Pervasive Computing Technologies for Healthcare 2018.

Certifications

* **Deep Learning Specialization** (from Stanford University)

* **Mastering Digital Twins** (from EIT Digital)

* **Machine Learning Foundations: A Case Study Approach** (from University of Washington)

* **Machine Learning: Clustering & Retrieval** (from University of Washington)

* **Specialization Machine learning: Build Intelligent Applications** (from University of Washington)

* **Neural Networks and Deep Learning** (from Stanford University)

* **Efficient Multi-Objective Optimization (Summer School)** (from Cologne University of Applied Sciences)

* **Knowledge-Driven Innovation and Entrepreneurship (Summer School)** (from University of Luxembourg)