





Elias Bassani

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EDUCATION

University of Milano-Bicocca, Italy November 2018 - February 2023
Ph.D. in Computer Science 4.0 GPA
Advisor: Prof. Gabriella Pasi

University of Massachusetts Amherst, MA, USA January 2020 - July 2020
Visiting Ph.D. Student
Advisor: Prof. W. Bruce Croft

University of Milano-Bicocca, Italy November 2014 – March 2017
Master's in Computer Science 4.0 GPA

University of Milano-Bicocca, Italy October 2011 - October 2014
Bachelor's in Computer Science 4.0 GPA

RESEARCH EXPERIENCE

Ph.D. November 2018 - February 2023
Information Retrieval (search engines), Personalization, Deep Learning

- Proposed approaches based on Neural Networks and Large Language Models for Personalized Search.
- Proposed model based on Neural Networks for Product Search leveraging heterogeneous information sources.
- Introduced Neural Attention variant for Personalization. It weighs and filters user-related information.
- Designed approach to efficiently exploit Word Embeddings in Personalized Search using clustering techniques.
- Built a new benchmark for Personalized Search comprising four domains, 20M documents and 2M queries.
- Designed and implemented a user-friendly Python library (ranx) for ranking evaluation, comparison, and fusion.
- Designed and implemented a user-friendly Python search engine (retriv) for lexical and semantic retrieval.
- Published in prestigious Information Retrieval venues (SIGIR, CIKM, ECIR) and Journals (Information Fusion).
- Implemented code in Python, PyTorch, PyTorch Lightning, HuggingFace's Transformer library, Hydra, and more.

WORK EXPERIENCE

Consorzio per il Trasferimento Tecnologico C2T | R&D November 2017 - February 2023
Technology transfer company

- Developed search engines with Elasticsearch, Python, PyTorch, JavaScript, Node.js, and React.
- Designed and implemented an interactive user interface for search engines with Python, JavaScript, and CSS.
- Developed Deep Learning models for finance-related task with PyTorch.
- Designed and implemented the backend of an interview management tool with JavaScript and Node.js.
- Designed and implemented the backend of a job-seeking platform with JavaScript and Node.js.
- Analysis of projects regarding finance, search engines, data warehousing, and data cleaning.
- Helped customers in streamlining and optimizing their workflows to include software tools.

LANGUAGES

Italian: Mother Tongue

English: Listening C1 · Reading C2 · Writing C2 · Spoken Production C1 · Spoken Interaction C1

SKILLS

Languages: Python (proficient) · \LaTeX (proficient) · JavaScript (rusty) · HTML/CSS (rusty)

Python Libraries: PyTorch · PyTorch Lightning · Numpy · Numba · Pandas · Scikit-Learn · Hydra · Optuna · FAISS

Other: Git · Bash · SSH · MongoDB · Elasticsearch · Docker · React · node.js

CERTIFICATIONS

Coursera: Deep Learning

Coursera: Natural Language Processing

British Council: IELTS 7.5 / C1

SERVICE

Reviewer: CIKM 2023 · SIGIR-AP 2023

PUBLICATIONS

E. Bassani, N. Tonello, G. Pasi, *Personalized Query Expansion with Contextual Word Embeddings*, To appear in ACM Transactions on Information Systems, 2023

E. Bassani, P. Kasela, G. Pasi, *Denoising Attention for Query-aware User Modeling in Personalized Search*, ArXiv Preprint, 2023

E. Bassani, *ranxhub: An Online Repository for Information Retrieval Runs*, SIGIR '23: Proceedings of the 46th International ACM SIGIR Conference, 2023

E. Bassani, P. Kasela, A. Raganato, G. Pasi, *A Multi-Domain Benchmark for Personalized Search Evaluation*, CIKM '22: Proceedings of the 31st ACM International Conference on Information & Knowledge Management, 2022

E. Bassani, L. Romelli, *ranx.fuse: A Python Library for Metasearch*, CIKM '22: Proceedings of the 31st ACM International Conference on Information & Knowledge Management, 2022

E. Bassani, *ranx: A Blazing-Fast Python Library for Ranking Evaluation and Comparison*, ECIR 2022: 44th European Conference on Information Retrieval, 2022

E. Bassani, G. Pasi, *Evaluating the Use of Synthetic Queries for Pre-training a Semantic Query Tagger*, ECIR 2022: 44th European Conference on Information Retrieval, 2022

E. Bassani, G. Pasi, *A Multi-Representation Re-Ranking Model for Personalized Product Search*, Information Fusion Volume 81, May 2022, Pages 240-249, 2022

E. Bassani, G. Pasi, *Semantic Query Labeling Through Synthetic Query Generation*, SIGIR '21: Proceedings of the 44th International ACM SIGIR Conference, 2021

E. Bassani, M. Viviani, *Quality of Wikipedia Articles: Analyzing Features and Building a Ground Truth for Supervised Classification*, KDIR 2019, 2019

E. Bassani, M. Viviani, *Automatically Assessing the Quality of Wikipedia Contents*, SAC '19: Proceedings of the 34th ACM/SIGAPP Symposium on Applied Computing, 2019

PERSONAL PROJECTS

ranx | *Python, Numba, Numpy*

- ranx is a Python library of ranking evaluation metrics implemented with Numba for high-speed vector operations and automatic parallelization. It offers a user-friendly interface to evaluate and compare Information Retrieval and Recommender Systems. It also provides statistical tests and can generate LaTeX tables for scientific publications.
- github.com/AmenRa/ranx

retriv | *Python, Numba, Numpy, PyTorch, Transformers, FAISS, Optuna*

- retriv is a user-friendly and efficient search engine implemented in Python supporting Sparse (traditional search with BM25, T F-IDF), Dense (semantic search) and Hybrid retrieval (a mix of Sparse and Dense Retrieval). It can build a fully functional search engine in a single line of code.
- github.com/AmenRa/retriv