Resul Tugay

https://resultugay.github.io/

Education

2019-2023	Ph.D, Data Science and Artificial Intelligence University of Edinburgh , Edinburgh, Scotland UK <i>Thesis - Learning, Deducing and Linking Entities</i>
2015-2018	M.Sc. in Computer and Informatics Engineering Istanbul Technical University , İstanbul, Turkey <i>Thesis - Distributed Bipartite Graph Clustering</i>
2013-2014	Escuela Técnica Superior de Ingeniería (ICAI) Ingeniería Informática(IINF) (Erasmus Pr.) Universidad Pontificia Comillas, Madrid, Spain
2010-2015	Bachelor of Science in Computer Engineering Karadeniz Technical University, Trabzon, Turkey <i>Thesis – Parallel Merge Sort Algorithm</i>

Objective & Research Interest

My research interests include: Applied ML/NLP, following but not limited to

- Learning Representation of Entities and Relations
- Multi Domain Recommender Systems
- Large Language Models
- Graphs

Work Experiences

- Assistant Prof at Ataturk University, Dept. Data Science and Artificial Intelligence, Erzurum, Turkey 25/03/2025 present
- Lecturer at Gazi University, Dept. Comp Science, Ankara, Turkey 04/10/2023 25/03/2025
- PhD ML Research Intern, **TikTok London**, 08/08/2022 28/10/2022
 - I was working on ML models on tabular data. In this project, we tried to protect the TikTok platform from fake engagements where these can be spam comments, fake followers etc. We have proposed a new idea based and got better results than baseline methods including CatBoost, NODE, TabTransformer architectures. The proposed method was also implemented in the BRIC (Business Risk Integrated Control) ML Team and ready to use.
- PhD ML Research Intern, Huawei London, 03/05/2022 01/08/2022
 - I was working on **Multi Domain Recommender (MDR)** systems with the app gallery team. I am extensively following the literature on these along with meta learning approaches. In this internship, 1 proposed a new idea, implemented it using pytorch and pytorch lightning, and got better results than baseline methods (DCN, MAMDR, etc.).

- Research Assistant, University of Edinburgh, 01/11/2021 01/05/2022
 - I was working on a project that explores financial transaction data associated with individuals and federated learning models. The project was a collaboration project with The University of Edinburgh, Turing Institute and University of Oxford. I was responsible for aggregating and manipulating large financial datasets which later will be used in machine learning models. My main job involved creating new features based on existing features in an efficient way. For this, I extensively used data structures and algorithms.
- Teaching Assistant, Tutor and Marker, University of Edinburgh, 09/09/2019 01/06/2021
 - I was a TA, marker, tutor of several lectures ranging from Machine Learning to Operating Systems.
- Research and Teaching Assistant, Istanbul Technical University, 11/02/2016 27/08/2019
- Jr. Software Engineer, "Agito Software & Consulting" company, 27/07/2015 08/02/2016
 - I worked as a junior software developer, Oracle PL/SQL developer. I was developing efficient ideas for databases along with programming issues.

Awards

- Outstanding Research Assistant, Istanbul Technical University Faculty of Computer and Informatics in 2018
- Outstanding Research Assistant, Istanbul Technical University Faculty of Computer and Informatics in 2019

Industrial Projects / Consultancy

- <u>www.btsgroup.com</u> Dynamic Graph Generation (2023- Present)
 - We have been working on dynamic graph generation for black hole detection project.
- <u>www.etstur.com</u> Customer Segmentation and Hotel Recom. System (2017-2018)
 - etstur.com is a company that is leading the tourism sector in Turkey. We have achieved a hotel recommendation system by combining Deep Learning, Content-Based and Collaborative Filtering methods. I gained real recommendation system experience that was deployed into production.
- <u>www.kariyer.net</u> Distributed Bipartite Graph Clustering (2016-2017)
 - This project was part of a project called "Bilateral Recommendation System Using Deep Learning Techniques" and was about clustering big bipartite data which consist of job and the corresponding candidates provided by job-site company kariyer.net in a distributed manner. This was also my master thesis. "Distributed Bipartite Graph Clustering". We used a neural collaborative filtering (NCF) approach and merged NCF with content information.
- <u>www.n11.com</u> Demand Prediction (2015-2016)
 - This project was accomplished for one of the biggest e-commerce companies n11.com by using stacked generalisation methods along with ML algorithms. We have published a paper "Demand Prediction using Machine Learning Methods

and Stacked Generalisation". In this project, 1 used Spark MLlib and gained experience on cassandra clusters that were being executed by the company.

Programming Skills

- Deep Learning: Pytorch, Pytorch Lightning, Tensorflow, Tensorboard
- Machine Learning: Scikit-learn, Spark MLlib
- Programming: Python, C++, Java
- Web programming: Python-flask, Django, HTML, CSS, JavaScript
- DBMS: Oracle, PostgreSQL, MySQL, MongoDB

Language Proficiency

• Turkish (Native), English (Fluent), Spanish (Fluent)

Publications

- Olug, E., Kaya, K., Tugay, R., & Oguducu, S. G. (2024). IBB Traffic Graph Data: Benchmarking and Road Traffic Prediction Model, CAMAD 2024
- Bas, S., Kaya, K., Tugay, R., & Oguducu, S. G. (2024). Data Augmentation in Graph Neural Networks: The Role of Generated Synthetic Graphs, ECML PKDD 2024
- Özbay B, Tugay R, Gündüz Öğüdücü Ş, A GNN Model with Adaptive Weights for Session-Based Recommendation Systems, ICMLT 2023
- Öztürk S, Tugay R, Gündüz Öğüdücü Ş, Enhancing Cross-Market Recommendation System with Graph Isomorphism Networks, ICMLT 2023
- Wenfei Fan, Resul Tugay, Min Xie, Yaoshu Wang Muhammed Asif Ali, "Learning and Deducing Temporal Orders" VLDB 2023
- Wenfei Fan, Ping Liu, Ruochun Jin, Resul Tugay, Wenyuan Yu. 2021. "Linking Entities across Relations and Graphs" ICDE 2022*.
 - *Authors are ordered alphabetically by their surnames
- Tugay R. and Gündüz Öğüdücü Ş. (2017). Demand Prediction using Machine Learning Methods and Stacked Generalization. In Proceedings of the 6th International Conference on Data Science, Technology and Applications
- Tugay, Resul, and Şule Gündüz Öğüdücü. "Ranky: An Approach to Solve Distributed SVD on Large Sparse Matrices." 2018 International Conference on Smart Computing and Electronic Enterprise (ICSCEE). IEEE, 2018.
- Berker B, Tugay R, Kizil I, Gunduz S, "Hotel Recommendation System Based on User Profiles and Collaborative Filtering", 4 th International Conference on Computer Science and Engineering UBMK'19.
- Çakır, Muhammet, Şule Gündüz Öğüdücü, and Resul Tugay. "A deep hybrid model for recommendation systems." International Conference of the Italian Association for Artificial Intelligence. Springer, Cham, 2019.
- Distributed Bipartite Graph Clusteringhttps://tez.yok.gov.tr/UlusalTezMerkezi/TezGoster?key=hcgrYffRbz0Z44UJEuLtwYIAi m1Tiv8Q3b4Lhdy2xlOB5ugPjX52B-CNmrdmKWSm