

# Fatih İlhan

## Resume

School of Computer Science, College of Computing  
Georgia Institute of Technology, Atlanta, GA, USA

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RESEARCH INTERESTS	Efficient and Scalable AI Inference/Finetuning Systems, AI Workload Management, Distributed/Federated Learning, Edge-Cloud Computing	
ACADEMIC EXPERIENCE	<b>Georgia Institute of Technology</b>	<b>Atlanta, GA, USA</b>
	Ph.D. in Computer Science, CGPA: 3.83/4.00, Supervisor: <a href="#">Prof. Ling Liu</a>	August 2021 – Present
	<ul style="list-style-type: none"><li>- Research focus areas: efficient inference/finetuning, federated learning, large language models, computer vision systems, adversarial machine learning</li><li>- Published ten papers (five as first author) in top venues such as CVPR, NeurIPS, EMNLP, WACV, ICDCS.</li><li>- Served as reviewer for CVPR, AAAI, ICML, ICDCS, IEEE PAMI, IEEE PAMI.</li><li>- Head TA for the Advanced Internet Systems course with 5 TAs and 100-150 students</li></ul>	
	<b>Bilkent University</b>	<b>Ankara, Türkiye</b>
	M.Sc. in EEE, CGPA: 3.58/4.00, Supervisor: <a href="#">Prof. Serdar Kozat</a>	September 2019 – August 2021
	<ul style="list-style-type: none"><li>- Thesis: Nonstationary Time Series Prediction with Markovian Switching RNNs</li><li>- Research focus areas: Nonstationary time series prediction, spatiotemporal event modeling</li><li>- Published three papers in top IEEE journals, served as reviewer for IEEE TNNLS, IEEE TSP.</li><li>- Served as grader for the Statistical Learning and Data Analytics, and Neural Networks courses.</li></ul>	
	B.Sc. in EEE, CGPA: 3.81/4.00	January 2018 – June 2019
	<ul style="list-style-type: none"><li>- Senior Project: GPS-independent outdoor localization system</li><li>- Specialization in signal processing, machine learning, communications</li><li>- Undergraduate research experience on video anomaly detection under the supervision of Asst. Prof. Hamdi Dibeklioglu and Prof. Serdar Kozat.</li><li>- Attended exchange program in Nagoya University, Japan during the Spring 2018 semester and studied intelligent systems for automobiles and traffic management systems.</li></ul>	
	<b>Ankara Science High School</b>	<b>Ankara, Türkiye</b>
	High School Degree, Natural Sciences Field, CGPA: 95.26/100	September 2010 – June 2014
WORK EXPERIENCE	<b>IBM Thomas J. Watson Research Center</b>	<b>Yorktown Heights, NY</b>
	Research Intern, Mentor: Dr. Gong Su, Manager: Dr. Donna Dillenberger	May-Aug 2022/2023/2024
	<ul style="list-style-type: none"><li>- I worked on memory-efficient decoding with KV caching compression for long-context inference with LLMs, filed a disclosure, and paper in progress (Summer 2024).</li><li>- I conducted research on efficient pruning for LLM finetuning in resource-constrained environments, which led to the publication of a paper at CVPR24 (Summer 2023).</li><li>- I worked on computation-efficient federated learning under heterogeneous settings with resource-constrained devices and filed a patent application. Our work led to two publications at CVPR23 and ICDCS23 (Summer 2022).</li></ul>	
	<b>DataBoss Analytics</b>	<b>Ankara, Türkiye</b>
	Machine Learning Engineer	August 2018 – July 2021
	<ul style="list-style-type: none"><li>- Built end-to-end AI pipelines for large-scale online temporal prediction and anomaly detection systems, analyzed complex spatio-temporal traffic, crime and weather data.</li></ul>	
	<b>Roketsan</b>	<b>Ankara, Türkiye</b>
	Engineering Intern	June 2017 – July 2017
	<ul style="list-style-type: none"><li>- Built a Labview application that enables communication with a GPS receiver and displays/records the position, velocity, heading and time data.</li><li>- Worked on integrating GPS and INS using Extended Kalman Filter.</li></ul>	

- [C18] **F. Ilhan**, G. Su, S. F. Tekin, T. Huang, S. Hu, and L. Liu, “Resource-Efficient Transformer Pruning for Finetuning of Large Models”, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.
- [C17] **F. Ilhan**, KH. Chow, S. Hu, T. Huang, S. F. Tekin, W. Wei, Y. Wu, M. Lee, R. Kompella, H. Latapie, G. Liu, L. Liu, “Adaptive Deep Neural Network Inference Optimization with EENet”, *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2024.
- [C16] T. Huang, S. Hu, **F. Ilhan**, S. F. Tekin and L. Liu, “Lazy Safety Alignment for Large Language Models against Harmful Fine-tuning”, *Thirty-seventh Conference on Neural Information Processing Systems (NeurIPS)*, 2024.
- [C15] S. F. Tekin, **F. Ilhan**, T. Huang, S. Hu and L. Liu, “LLM-TOPLA: Efficient LLM Ensemble by Maximising Diversity”, *ACL Conference on Empirical Methods in Natural Language Processing (EMNLP Findings)*, 2024.
- [C14] KH. Chow, Sihao Hu, Tiansheng Huang, **Fatih Ilhan**, Wenqi Wei, and Ling Liu, “Diversity-driven Privacy Protection Masks Against Unauthorized Face Recognition”, *Privacy Enhancing Technologies Symposium (PETS)*, 2024
- [C13] **F. Ilhan**, G. Su, Q. Wang and L. Liu, “Scalable Federated Learning with System Heterogeneity”, *IEEE International Conference on Distributed Computing Systems (ICDCS)*, 2023. (demo)
- [C12] **F. Ilhan**, G. Su and L. Liu, “ScaleFL: Resource-Adaptive Federated Learning with Heterogeneous Clients”, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.
- [C11] **F. Ilhan**, S. F. Tekin, S. Hu, T. Huang, KH. Chow, L. Liu, “Hierarchical Deep Neural Network Inference for Device-Edge-Cloud Systems”, *ACM International World Wide Web Conference (WWW)*, 2023. (poster)
- [C10] T. Huang, S. Hu, KH. Chow, **F. Ilhan**, S. F. Tekin and L. Liu, “Lockdown: Backdoor Defense for Federated Learning with Isolated Subspace Training”, *Thirty-seventh Conference on Neural Information Processing Systems (NeurIPS)*, 2023.
- [C9] KH. Chow, L. Liu, W. Wei, **F. Ilhan** and Y. Wu, “STDLens: Securing Federated Learning Against Model Hijacking Attacks”, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.
- [C8] W. Wei, L. Liu, KH. Chow, **F. Ilhan** and Y. Wu, “Model Cloaking against Gradient Leakage”, *IEEE International Conference on Data Mining (ICDM)*, 2023.
- [C7] S. Hu, T. Huang, **F. Ilhan**, S. F. Tekin, L. Liu, “Large Language Model-Powered Smart Contract Vulnerability Detection: New Perspectives”, *IEEE International Conference on Trust, Privacy and Security in Intelligent Systems, and Applications (IEEE TPS-ISA)*, 2023.
- [C6] **F. Ilhan**, S. F. Tekin and B. Aksoy, “Spatio-Temporal Crime Prediction via Temporally Hierarchical Convolutional Neural Networks”, *28th IEEE Signal Processing and Communications Applications Conference*, 2020.
- [C5] **F. Ilhan**, N. M. Vural and S. S. Kozat, “LSTM-Based Online Learning with Extended Kalman Filter Based Training Algorithm”, *28th IEEE Signal Processing and Communications Applications Conference*, 2020.
- [C4] **F. Ilhan** and E. Mumcuoglu, “Performance Analysis of Semi-Supervised Learning Methods under Different Missing Label Patterns”, *28th IEEE Signal Processing and Communications Applications Conference*, 2020.
- [C3] **F. Ilhan**, S. F. Yilmaz and S. S. Kozat, “A Two-Stage Multi-Class Classification Approach Based on Anomaly Detection”, *28th IEEE Signal Processing and Communications Applications Conference*, 2020. (poster)
- [C2] N. M. Vural, B. Altas, **F. Ilhan** and S. S. Kozat, “Shortest Path Learning in Non-Stationary Environments via Online Convex Optimization”, *28th IEEE Signal Processing and Communications Applications Conference*, 2020.
- [C1] N. M. Vural, B. Altas, **F. Ilhan** and S. S. Kozat, “Online Shortest Path Learning via Convex Optimization”, *28th IEEE Signal Processing and Communications Applications Conference*, 2020.

JOURNAL  
PAPERS

- [J3] **F. Ilhan**, O. Karaahmetoglu, I. Balaban and S. S. Kozat, “Markovian RNN: An Adaptive Time Series Prediction Network with HMM-based Switching for Nonstationary Environments”, *IEEE Transactions on Neural Networks and Learning Systems*, 2021.
- [J2] N. M. Vural, **F. Ilhan**, S. F. Yilmaz, S. Ergüt and S. S. Kozat, “Achieving Online Regression Performance of LSTMs with Simple RNNs”, *IEEE Transactions on Neural Networks and Learning Systems*, 2021.
- [J1] **F. Ilhan** and S. S. Kozat, “Modeling of Spatio-Temporal Hawkes Processes with Randomized Kernels”, *IEEE Transactions on Signal Processing*, 2020.

PREPRINTS

- [P8] **F. Ilhan**, G. Su and L. Liu, “Memory-Efficient Decoding with KV Cache Compression for Long-Context LLMs”, *under review*, 2024.
- [P7] **F. Ilhan**, S. F. Tekin, S. Hu, T. Huang and L. Liu, “Fed4LM: Efficient Federated Finetuning under Data and Resource Heterogeneity with a Mixture of Masked Adapters”, *under review*, 2024.
- [P6] T. Huang, S. Hu, **F. Ilhan**, S. F. Tekin, W. Wei, and L. Liu, “Backdoor Defense for Decentralized Learning with Fisher Information Guidance”, *under review*, 2024.
- [P5] S. F. Tekin, **F. Ilhan**, T. Huang, S. Hu and L. Liu, “FusionShot: Boosting Few Shot Learners with Focal-Diversity Optimized Ensemble Method”, *under review*, 2024.
- [P4] KH. Chow, **F. Ilhan**, W. Wei, Y. Wu, M. Lee, G. Liu, R. Kompella and L. Liu, “Focal Diversity-Optimized Object Detection Ensembles”, *under review*, 2024.
- [P3] S. Hu, T. Huang, **F. Ilhan**, S. F. Tekin and L. Liu, “A Survey on Large Language Model-Based Game Agents”, *under review*, 2024.
- [P2] S. Hu, T. Huang, KH. Chow, **F. Ilhan**, S. F. Tekin and L. Liu, “Linking Ethereum Accounts with Pseudo-supervised Pre-trained Language Models”, *under review*, 2024.
- [P1] Y. Wu, KH. Chow, S. Hu, **F. Ilhan**, W. Wei and L. Liu, “An Error Diversity Optimization Framework for Creating Efficient Ensemble Learning Systems”, *under review*, 2024.

AWARDS AND  
HONORS

- 191st among 2M high school graduates in University Entrance Examination.
- 80th among 0.2M university graduates in ALES (National GRE).
- Full Scholarship from the Scientific and Technological Research Council of Türkiye for M.Sc. studies.
- JASSO Scholarship for Exchange Program at Nagoya University.
- Full Scholarship from Bilkent University during B.Sc. and M.Sc. Studies.
- Bilkent University High Honor Student during B.Sc. Studies.

SKILLS

**Programming:** Python, SQL, R, C++, Java, MATLAB, Assembly (8051), VHDL  
**Tools:** Deep Learning Libraries (Tensorflow, PyTorch, Keras), MLOps Tools (Kubernetes, Polyaxon, MLFlow), Other Tools (Docker, Flask, Django, Kafka, Spark), Agile (Gitlab, Atlassian Tools)  
**Test Scores:** TOEFL iBT: 108, GRE: 149/170/3.5  
**Languages:** Turkish (Native), English (Advanced), Japanese (Lower intermediate ~N4)

SOCIAL  
ACTIVITIES

- Bass Guitarist in “Parallel Park” (2022-2023)
- Bilkent University Music Club Member (2014-2017)
- Bass Guitarist in “Freud Goes Technical” (2014-2017)
- Bilkent IEEE Student Branch Member (2014-2016)
- Bilkent University Open Software and Internet Technologies Club Member (2014-2015)
- Ankara Science High School Electronics Club Member (2012-2014)
- Ankara Science High School Physics Olympiads Team Member (2010-2012)

HOBBIES

- Backpacking, overnight camping, being on the road
- Playing bass, discovering new music genres