
RESEARCH INTERESTS

- **AI for Sciences, Generative AI:** image reconstruction with transformers and diffusion models
- **Foundation Models:** reasoning and self-feedback in LLMs, vision-language models
- **Theory for Deep Learning:** generalization guarantees for shallow ReLU networks

EDUCATION

- **University of Southern California (USC)** Los Angeles, CA
Ph.D. Student in Electrical and Computer Engineering; GPA: 4.00/4.00 Aug 2020 – Present
Master of Science in Electrical and Computer Engineering; GPA: 4.00/4.00 Aug 2020 – Dec 2022
Advisor: Prof. Mahdi Soltanolkotabi
- **Bilkent University** Ankara, TR
Bachelor of Science in Electrical and Electronics Engineering; GPA: 3.95/4.00 Sep 2016 – June 2020
Graduation Rank: 5/153

RESEARCH EXPERIENCE

- **AI Foundations for Sciences Center (AIF4S) at USC** Los Angeles, CA
Research Assistant. Advisor: Prof. Mahdi Soltanolkotabi Jan 2022 - Current
 - **Large Language Models:** Working on improving LLMs via self-feedback and self-revision loops. Interested in understanding which tasks benefit from self-correcting ability of foundation models. Exploring how synthetic negative samples can be used to improve reasoning capabilities of LLMs.
 - **Generative AI:** Worked on sample-adaptive latent diffusion posterior sampling for solving inverse problems, incorporating forward model information into training of diffusion models to ensure data-consistency, accelerating MRI reconstruction via transformer-convolution hybrid architecture.
 - **Machine Learning Theory:** Working on global convergence of learning linear target functions with small initialized shallow ReLU networks.
- **Signal Analysis and Interpretation Lab (SAIL) at USC** Los Angeles, CA
Research Assistant. Advisor: Prof. Shrikanth Narayanan Sep 2020 - Dec 2021
 - Modeling and detection of personal attributes: Improved detection and classification performance of RetinaNet on OpenImages by augmenting the data with Mask-RCNN bounding box predictions.
- **National Magnetic Resonance Research Center (UMRAM)** Ankara, TR
Undergraduate Researcher. Advisor: Prof. Tolga Çukur Oct 2018 - Apr 2020
 - Semi-supervised learning of accelerated multi-contrast MRI synthesis, undersampled across both contrast sets and k-space coefficients by leveraging randomized sampling masks across training subjects. Achieved competitive performance compared to fully-sampled training.
- **Imperial College London** London, UK
Research Intern at iBUG. Advisor: Prof. Maja Pantic and Dr. Stavros Petridis July 2018 - Sept 2018
 - Contributed to the development of a novel audio-visual dataset, and detection of blinks and mouth openings in videos. Integrated a face detection algorithm to an existing face alignment tool which increased the performance over 45° poses.

SELECTED PUBLICATIONS

- [1] Z. Fabian*, **B. Tinaz***, and M. Soltanolkotabi, “Adapt and diffuse: Sample-adaptive reconstruction via latent diffusion models,” in *preparation*, May 2023.
- [2] Z. Fabian, **B. Tinaz**, and M. Soltanolkotabi, “Diracdifusion: Denoising and incremental reconstruction with assured data-consistency,” Mar. 2023. [Online]. Available: <https://arxiv.org/abs/2303.14353>.

- [3] Z. Fabian, **B. Tinaz**, and M. Soltanolkotabi, “Humus-net: Hybrid unrolled multi-scale network architecture for accelerated mri reconstruction,” in *36th Conference on Neural Information Processing Systems (NeurIPS)*, 2022. [Online]. Available: <https://arxiv.org/abs/2203.08213>.
- [4] M. Yurt, S. Dar, **B. Tinaz**, M. Ozbey, Y. Korkmaz, and T. Cukur, “A semi-supervised learning framework for jointly accelerated multi-contrast mri synthesis without fully-sampled ground-truths,” in *29th annual meeting of International Society for Magnetic Resonance Imaging (ISMRM)*, Virtual Conference, May 2021.
- [5] M. Yurt, **B. Tinaz**, M. Ozbey, S. U. H. Dar, and T. Çukur, “Semi-supervised learning of multi-contrast MR image synthesis without fully-sampled ground-truth acquisitions,” in *Medical Imaging Meets NeurIPS*, Virtual Conference, Dec. 2020.

HONORS AND AWARDS

- **Machine Learning Summer Schools:** Attended to CIFAR DLRL (2021), MLSS (2021), and Princeton ML Theory (2022) summer schools.
- **USC ECE Ph.D. Screening Exam:** Ranked 1st among test takers, 2021
- **Bilkent University Graduate Research Conference (GRC):** Best paper award for the publication ”Semi-supervised learning of mutually accelerated multi-contrast MRI synthesis without fully-sampled ground-truth”, 2021
- **USC Viterbi School of Engineering/Graduate School Fellowship:** Full tuition waiver & stipend during the first year of Ph.D. program, 2020
- **Bilkent University Comprehensive Scholarship and High Honor Student:** Full tuition waiver & stipend during the B.Sc. program. High honor student for 8 consecutive semesters, 2016-2020
- **IEEEExtreme 11.0 Programming Competition:** Ranked 3rd in Turkey as a team of three, 2017
- **Nationwide University Entrance Exam (LYS):** Ranked 139th among 2 million students in Turkey, 2016

SKILLS

- **Language:** English (fluent, TOEFL iBT: 109/120), Turkish (native)
- **Programming:** Python, MATLAB, L^AT_EX, C/C++, R
- **Libraries:** PyTorch, NumPy, Matplotlib, Scikit-Learn, OpenCV

TEACHING EXPERIENCE

- **University of Southern California (USC)** Los Angeles, CA
Teaching Assistant
 - EE562 Random Processes in Engineering (Spring 2022): holding office hours and discussion sessions, preparing and grading homeworks and exams.
 - EE546 Mathematics of High-Dimensional Data (Fall 2023): holding office hours, preparing homeworks.

EXTRACURRICULAR ACTIVITIES AND HOBBIES

- **USC exploreCSR Workshop Series on Computational Media Intelligence (2021):**
 - Mentoring undergraduates through workshop series in computational media intelligence sponsored by Google Research.
- **Bilkent IEEE Student Branch Active Member (2016-2020):**
 - ”Road to University” Volunteer (2016-2017): Introducing engineering and campus life to high school students from all around Turkey.
 - Graphics Design Team: Made several posters for the events organized by the student branch of IEEE.
- **Hobbies:** Playing the piano, Amateur Photography, Travelling, Hiking/Camping, Reading, Trekking