

# Berker Demirel

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## EDUCATION

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- Sabanci University** Istanbul, Turkey  
*Masters in Computer Science; GPA: 3.9* *Sep 2021 - Current*  
*Courses: Deep Learning, Detection and Estimation Theory, Statistical Methods and Inference, Logic in Computer Science, Mathematical Analysis, Theory of Computation and Pattern Recognition.*
- Sabanci University** Istanbul, Turkey  
*BS. Computer Science and Engineering, BA. Economics (DM) and Mathematics (Minor); GPA: 3.84* *Sep 2015 - Jun 2021*

## SKILLS SUMMARY

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- Languages:** C, C++, Python, Go, Unix scripting
- Tools:** PyTorch, MATLAB, OpenMP, GIT, CUDA, CPLEX

## PUBLICATIONS

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- Arda Asik, Bugra Demir, Berker Demirel and Baris Batuhan Topal, **Vertex Ordering Algorithms for Graph Coloring Problem**, IEEE Signal Processing and Communications Applications, 2020.

## ACADEMIC PROJECTS

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- A Toolbox for ANOVA and Linear Regression:** Calculated confidence intervals and F-tests for 1-way ANOVA, 2-way ANOVA and Linear Regression utilizing Scheffe's and Tukey's methods given test contrasts. (Mar '21)
- Classifying Mixture of Gaussians using Expectation-Maximization Algorithm:** Utilized EM algorithm to classify 2-dimensional multi-class mixture of gaussian datasets using MATLAB and compared EM algorithm's false alarm rate with oracle decision rule. (Nov '20)
- Data Generating using Deep Convolutional Generative Adversarial Networks:** Measured performances of 3 different DCGAN algorithms using PyTorch. Learned the distribution of CIFAR10 (10 different animal classes), MNIST (10 different digits) and CelebA (human faces) datasets to generate images. (May '20)
- Graph Coloring using Reinforcement Learning:** Discovered chromatic numbers of graphs in the dataset of over 250 samples using CPLEX. Created a Q-Learning Algorithm prioritizes nodes with respect to values. (Sep '19)
- Piecewise Linear Classification with Active Learning:** Evaluated the performance of online perceptron algorithm with split parameters 4, 8, 16, 32 and 64 for binary classification. (Jan '18)

## EXPERIENCE

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- Sabanci University** Istanbul, Turkey  
*Teaching Asistant* *Sep 2021 - Current*
  - Courses:** Introduction to Computing, Advanced Computing (Coordinating), and Data Structures
  - Held weekly recitation sessions and office hours.
  - Produced supplementary lecture videos, prepared and graded programming homeworks.
  - Provided, solutions to, and graded exams.
  - As a coordinating TA, handled all the announcements to the class of 200+ students and worked closely with other assistants to help them prepare and grade homeworks.
- ICHEC (Irish Centre for High End Computing)** Dublin, Ireland  
*Research Intern - Prof. Buket Benek Gursoy* *Jun 2020 - Aug 2020*
  - Participated in the project "GPU Acceleration of Breadth-First Search algorithm in applications of Social Networks" for two months.
  - Proposed 7 different Direction Optimized BFS algorithms for CUDA and ran experiments.
- Erasmus University Rotterdam** Rotterdam, Netherlands  
*Research Intern - Prof. Ilker Birbil* *Jun 2019 - Aug 2019*
  - Implemented Policy-Gradient based and Value based Reinforcement Learning Algorithms to solve Graph Coloring Problem
  - Prepared a technical report about proposed algorithms and presented the study to the supervisor

## HONORS AND AWARDS

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- Ranked 1st among batch of 20 students in the Department of Economics at Sabanci University.
- Ranked 5th among batch of 90 students in the Department of Computer Science & Engineering at Sabanci University.
- Dean's High Honor List, 2015-2021.
- Honor scholarship for 5 years, awarded for ranking 1878th out of approximately 2 million people in a nationwide university admission exam.