SIDDARTHA DEVIC

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EDUCATION

University of Southern California *August 2021 - Present*
Ph.D. Computer Science GPA: 3.94
Co-advised by Prof. Vatsal Sharan and Prof. Aleksandra Korolova
Interests: Theoretical machine learning, algorithmic fairness
Coursework: convex optimization, online learning, theoretical machine learning, algorithms

The University of Texas at Dallas *August 2017 - May 2021*
B.S. Mathematics, B.S. Computer Science Summa Cum Laude, GPA: 3.98
CS^2 Computer Science Honors Program, Collegium V Interdisciplinary Honors Program

RESEARCH EXPERIENCE

Theory Group (various projects) *August 2021 - Present*
Student Researcher, University of Southern California

- Fairness in bipartite matching (Profs. David Kempe, Vatsal Sharan, Aleksandra Korolova)
- Implicit spectral bias of neural networks trained with SGD (Profs. Vatsal Sharan, Yan Liu)
- Learning halfspaces with restricted Massart noise, multicalibration (Prof. Vatsal Sharan)

Markov Lab *October 2017 - May 2021*
Student Researcher and NSF REU Program, UT Dallas

- Reinforcement learning and convex optimization research (Profs. Nick Ruozzi, Ben Raichel).
- Convex function fitting and computational geometry with applications in reinforcement learning.

Advanced Networks Research Lab *April 2018 - December 2020*
Student Researcher, UT Dallas

- Applied machine learning and convex optimization research with Prof. Jason Jue.
- Agent-based "progressive recovery" for networks with theory and reinforcement learning in graphs.
- Online convex optimization (OCO) for *fair* online resource allocation in bandwidth management.
- Inference-time failure resilient distributed neural networks using novel training techniques.

Washington University in St. Louis *Summer 2020*
Research Intern, WashU Computer Science & Engineering NSF REU Program

- Reinforcement learning theory research with Prof. Brendan Juba (work from home due to COVID-19).
- Fully polynomial time reinforcement learning in exponential sized MDPs with linear value functions.

Johns Hopkins Applied Physics Labs *Summer 2019*
Research Intern

- Machine learning research with the Machine Perception group, supervised by Vickram Rajendran.
- AI and machine learning research with the Machine Perception group in Tactical Intelligent Systems.
- Active secret clearance (2029) for classified defense projects dealing with object detection.

Future Immersive Virtual Environments Lab *Summer 2017*
Student Researcher, UT Dallas

- Human-computer interaction research with Prof. Ryan P. McMahan.
- Novel method for physical object selection and representation in virtual reality.
- Prototyped in Unity3D for the HTC VIVE headset as part of Clark research program for pre-freshman.

PUBLICATIONS

(* denotes equal contribution / alphabetical order)

Polynomial Time Reinforcement Learning in Correlated FMDPs with Linear Value Functions
Zihao Deng*, Siddartha Devic*, Brendan Juba*.
AISTATS 2022. Also at Neurips 2021 Workshop on Ecological Theory of Reinforcement Learning.

Dynamic Bandwidth Allocation for PON Slicing with Performance-Guaranteed Online Convex Optimization
Genya Ishigaki, Siddartha Devic, Riti Gour, Jason P. Jue.
IEEE GLOBECOM 2021.

Failout: Achieving Failure-Resilient Inference in Distributed Neural Networks
Ashkan Yousefpour, Brian Q Nguyen, Siddartha Devic, Guanhua Wang, Aboudy Kreidieh, Hans Lobel, Alexandre M Bayen, Jason P Jue.
ICML 2020 Workshop on Federated Learning for User Privacy and Data Confidentiality.

DeepPR: Progressive Recovery for Interdependent VNFs with Deep Reinforcement Learning
Genya Ishigaki, Siddartha Devic, Riti Gour, Jason P. Jue.
IEEE Journal on Selected Areas in Communications, 2020. Also appeared at IEEE GLOBECOM 2019.

POSTERS & TALKS

Learning Quickly in MDPs with Many States *(USC Theory Lunch 2022)*

Gradient Descent and Clustering in Hyperbolic Space *(Slides, Report, Graduate Course Project 2020)*

Online PR with Bounded Regret *(Poster, UTD Undergraduate Research Contest 2020)*

Point Packing in Hypercubes *(Slides, UTD Mathematics Problem Solving Group 2019)*

ALICE for Deep Active Learning *(Talk, Johns Hopkins Applied Physics Labs 2019)*

Failure-Resilient Distributed Deep Learning Inference *(Poster, Huawei Future Networks Summit 2019)*

Convex Functions for Reinforcement Learning *(Poster, UTD Undergraduate Research Contest, 2019)*

Robust Optimization with Applications in Networking *(Slides, UTD Graduate Seminar, 2019)*

A Reinforcement Learning Based Approach to Networking *(Slides, UTD Graduate Seminar, 2019)*

Improving Generalization in Neural Networks Through Margin Maximization *(Poster, UTD, 2018)*

Digitally Representing Physical Objects for Collision Avoidance in VR *(Poster, Clark Program, 2017)*

AWARDS, ACADEMIC ACHIEVEMENTS, & SUMMER PROGRAMS

UCLA IPAM Graduate Summer School on Algorithmic Fairness *2022*

DoD National Defense Science and Engineering Graduate (NDSEG) Fellowship *2021*

NSF Graduate Research Fellowship Program (GRFP) Honorable Mention *2021*

Barry Goldwater Scholar Nomination (one of four STEM students representing UT Dallas) *2020*

Jonsson School Undergraduate Research Award (awarded to ten engineering students) *2019-2020*

UT Dallas Undergraduate Research Scholar Award (academic-year research support) *2018-2019*

Intel Innovate FPGA Top 20 (national semi-finalist, YOLO for traffic safety) *2018*

School of Engineering Dean's List (top 10% within engineering) *4 of 5 Semesters*

UT Dallas Academic Excellence Scholarship (full undergraduate tuition + stipend) *2017 - 2021*

Anson L. Clark Undergraduate Research Scholar (participant & advisor) *Summers 2017, 2018*

MENTORSHIP

Jayron Martinez (High School Student): Bias in Machine Learning Algorithms *Summer 2022*

STUDENT ACTIVITIES

ACM UTD Chapter President Led the largest CS organization at UTD (70 officers, 700+ Members). I proposed and established a $30k perpetual endowed scholarship with club funds. Coordinated student-based semester long technical projects, mentorship programs, a 750+ person hackathon, funding for student startups, industry talks, and more. *8-10 hours/week, March 2018 - Dec. 2020.* [site]

Empower Through Code Organized and attend weekly STEM workshops for at-risk middle school girls in low income areas, exposing them to engineering and developing critical thinking. *2-3 hours/week, Oct. 2018 - March 2020 [COVID-19].*