

# SIDDARTHA DEVIC

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## EDUCATION

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**The University of Texas at Dallas**

*August 2017 - May 2021*

B.S. Mathematics, B.S. Computer Science

GPA: 3.97/4.0

CS<sup>2</sup> Computer Science Honors Program, Collegium V Interdisciplinary Honors Program

## TECHNICAL SKILLS

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**Machine Learning**

Python, Tensorflow, Keras, PyTorch, OpenCV, sklearn

**Programming & Software**

Java, C++, Linux, C#, C, vim, git, L<sup>A</sup>T<sub>E</sub>X, Unity3D, QT, MIPS

## WORK & RESEARCH EXPERIENCE

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**Washington University in St. Louis**

*June 2020 - October 2020*

*Research Intern, WashU Computer Science & Engineering NSF REU Program*

- Machine learning theory research with Prof. Brendan Juba (remote work from home due to COVID-19).
- Fully polynomial time reinforcement learning in exponential sized MDPs with linear value functions.
- Theoretical reinforcement learning for episodic regret bounds with a polynomial-time oracle planner.

**Johns Hopkins Applied Physics Labs**

*Summer 2019*

*Research Intern*

- 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.
- Unclassified fundamental research project investigating deep active learning with “Accurate Layerwise Interpretable Confidence Estimation” (ALICE).
- Developed active learning framework for Keras and Pytorch; rapid prototyping of ML models.

**Advanced Networks Research Lab**

*April 2018 - Present*

*Student Researcher, UT Dallas*

- Applied machine learning and convex optimization research under the guidance of 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.

**Markov Lab**

*October 2017 - Present*

*Student Researcher, UT Dallas*

- Fundamental machine learning research under the guidance of Prof. Nick Ruoizzi and Prof. Ben Raichel.
- NSF REU supplement funding for work on “Giving Form to Data with a Geometric Scaffold”.
- Iterative and stochastic convex function fitting with applications in reinforcement learning.
- Piecewise linear convex hulls in kernel space for arbitrary function representation and minimization.
- Investigating maximum margin neural networks for improved generalization.

**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

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### **Failout: Achieving Failure-Resilient Inference in Distributed Neural Networks**

Ashkan Yousefpour, Brian Q Nguyen, [Siddhartha Devic](#), Guanhua Wang, Aboudy Kreidieh, Hans Lobel, Alexandre M Bayen, Jason P Jue.

*ICML 2020 Workshop: Federated Learning for User Privacy and Data Confidentiality (Long talk).*

### **DeepPR: Progressive Recovery for Interdependent VNFs with Deep RL**

Genya Ishigaki, [Siddhartha Devic](#), Riti Gour, Jason P. Jue.

*IEEE Journal on Selected Areas in Communications, 2020. Also appeared at IEEE GLOBECOM 2019.*

## POSTERS & TALKS

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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)

## ACADEMIC ACHIEVEMENTS

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DoD National Defense Science and Engineering Graduate Fellowship (NDSEG) 2021 - 2024

NSF Graduate Research Fellowship Program (GRFP) Honorable Mention 2021

Barry Goldwater Scholar Nomination (selected as one of four STEM students to represent UT Dallas in one of the most prestigious national undergraduate research scholarships) 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 (Honors level, includes full tuition + stipend) 2017 - 2021

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

## STUDENT ACTIVITIES

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**ACM UTD Chapter President** Lead the largest CS organization at UTD (70 officers, 700+ Members). I proposed and established a [\\$30k perpetual endowed scholarship](#) with club funds. We coordinate 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** Organize 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].

## RELEVANT UNDERGRADUATE COURSES (BY MAY 2021)

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**Graduate** - Optimization in Machine Learning

**Honors** - Data Structures and Algorithms, Operating Systems, Computer Architecture, Differential Equations, Discrete Mathematics II, Automata Theory, Programming Languages, Digital Logic and Computer Design.

**Normal** - Topology, Advanced Algorithms, Machine Learning, Mathematical Analysis I & II, Abstract Algebra I & II, Numerical Analysis, Databases, Differential Geometry, Probability, Statistics, Complex Variables, Linear Algebra, Calculus I, II, & III.