NAREN S. DASAN:
I am computer engineer with 7 years of experience in developing robotics, machine learning, embedded systems. I graduated from the University of Illinois at Urbana-Champaign for **BS in Computer Engineering**, in May 2018. More information on my work can be found at http://narendasan.com

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WORK EXPERIENCE

AUTOMOTIVE DEEP LEARNING SOLUTION ARCHITECT - NVIDIA - SANTA CLARA, CA - JULY 2018 - PRESENT
- Solution Architect in the NVIDIA Automotive group working on applications of Deep Learning for Autonomous Vehicles.
- Worked on tackling issues ranging from heterogenous computing, object detection, behavior modeling, efficient NNs and compilers
- Developed multiple open source projects for deep learning on NVIDIA platforms (DRIVE AGX, NVIDIA GPUs) TRTorch, DL4AGX

AUTOMOTIVE SOLUTION ARCHITECT INTERN - NVIDIA - SANTA CLARA, CA - JANUARY - AUGUST 2017
- Solution Architect Intern for the NVIDIA Automotive group with a focus on self driving car technology.
- Implemented products and features directly impacting NVIDIA's automotive customers looking to develop self driving car capabilities.
- Major contributions to the TensorRT NN Optimizer, original author of the Python API for TenorRT and improved usability for dev/deploy.

RESEARCH ASSISTANT, BRETL GROUP, UNIVERSITY OF ILLINOIS @ URBANA - AUG 2016 - JAN 2017
- Worked with Professor Tim Bretl on robot manipulation and grasping research.
- Worked on a project developing control algorithms to manipulate elastic materials and verifying pose with computer vision
- Applications in industrial and mobile robotics like robotic installation of a wire harness. http://bretl.csl.illinois.edu/

EMBEDDED SOFTWARE ENGINEERING INTERN — NEST LABS INC. - BOULDER, CO — MAY - AUGUST 2016
- Developed embedded software for the next generation Works With Nest Platform, featuring work on Thread and Nest Weave.
- Completed platform, working on hardware and demonstrated hardware implementation at Nest HQ in California
- Helped develop custom DSL for creating Weave devices, work was open sourced as part of the OpenWeave project

RESEARCH ASSISTANT, VISION GROUP, UNIVERSITY OF ILLINOIS @ URBANA - FEB 2015 - MAY 2018
- Worked with Professor Derek Hoiem on visual scene understanding and object reconstruction.
- Using LSD-SLAM, SFM tools and in-house developed image processing techniques in C++ and MATLAB to understand scenes.
- Techniques can be used in object reconstruction, motion planning and robotics. http://dhoiem.cs.illinois.edu/

DESIGN INTERN - ORACLE CORP. REDWOOD CITY, CA — MAY - AUGUST 2015
- Developed UI and front-end features for Oracle's new Support Portal - web platform for all Oracle's support, multibillion dollar business

- Conducted user studies, custom developed UI kits and prototyped a replacement for this legacy system used by 20+K employees.
- Conducted Heuristic Evaluations to come up with a new design for - http://support.oracle.com

SOFTWARE ENGINEERING INTERN- SOLIDFIRE INC. BOULDER, CO — MAY - AUGUST 2014
- Developed software for optimizing large binary transfers between cloud compute clusters.
- Created a new parallelized delta compression tool designed specifically for the DWARF debugging format on Linux.
- Currently deployed in SolidFire Inc. for debugging operating systems on remote test benches - http://solidfire.com/

RESEARCH INTERN, CORRELL LAB FOR SWARM ROBOTICS, UNIVERSITY OF COLORADO — MAY 2013 - 2014
- Developed a novel user interface for use in a distributed computing system of self-organizing wall components.
- Developed embedded C++ and C code, designed hardware components in Eagle and used SolidWorks software for 3D design.
- Designed distributed algorithms to provide components with relative location and emergent sensor functionality and UI.

PROJECTS AND PUBLICATIONS
TRTORCH: A PYTORCH/TORCHSCRIPT COMPILER FOR NVIDIA GPUS WITH TENSORRT - APRIL 2020-2021
- Compiler for TorchScript and PyTorch that optimizes models for deployment on NVIDIA GPUs while maintain full compatibility with PyTorch
- Users provide models and receive an optimized portable binary which contains code to execute their model on GPU w/ TensorRT
- Work presented at GTC 2020, GTC 2021 and PyTorch Ecosystem Conference

TWILIGHT: RECONFIGURABLE SELF ORGANIZING OFFICE LIGHTING - MAY 2018
- Developed a swarm based lighting system which self organizes to build an intelligent lighting system
- Nodes in the system localize and communicate to run app that control lighting temperature, visualization and other smart office functions
- Senior Thesis for BS in Computer Engineering - University of Illinois Urbana-Champaign

3DFS: DEFORMABLE DENSE DEPTH FUSION AND SEGMENTATION .... - JULY 2016
- Technical report presenting an approach to do 3D reconstruction and segmentation of a single object from handheld video
- Worked on LSD-SLAM -> PMVS point cloud generation to feed into the 3DFS pipeline
- Contributed work using LSD-SLAM, PMVS and Poisson Reconstruction to demonstrate past state of the art

GESTURE BASED DISTRIBUTED UI FOR A RECONFIGURABLE SELF-ORGANIZING SMART WALL - FEB. 2014
- Describes user interactions with the self-organized amorphous wall using swarm robotics techniques.
- A modular, fully distributed/decentralized system of smart building blocks that communicate locally for creating smart surfaces.
- Published in ACM Conference on Tangible Embedded and Embodied Interactions 2014, Munich Germany - ACM digital library.

EDUCATION
University of Illinois, Urbana-Champaign, BS in Computer Engineering May 2018

Focusing on Robotics, Computer Vision, Machine Learning, Distributed/Embedded/Operating Systems

Chair of UIUC Chapter of ACM - 2017 - Nation's largest student chapter

SKILLS

- ML Model Development and Deployment using PyTorch, Tensorflow and TensorRT (Python/C++)
- Distributed, Parallel and Embedded programming using C and C++ on ARM, Intel and Microcontrollers to build realtime systems
- Developed a linux clone, with scheduling, threads, locking, paging, memory management, display and peripheral drivers. (C/C++/Rust)
- Developed web apps with AngularJS, Node.js, Rails, net/http. Programmed API and backend in Go, Python and Ruby
- C, C++, Rust, Python programmer with ability optimize programs via elegant use of data structures and algorithms

CITATIONS FOR CONFERENCE TALKS AND MAJOR WORKS

- [Conference Paper/Poster] Gesture based distributed user interaction system for a reconfigurable self-organizing smart wall

Farrow, N., Sivagnanadasan, N., & Correll, N. (2014, February). Gesture based distributed user interaction system for a reconfigurable self-organiz -ing smart wall. In Proceedings of the 8th International Conference on Tangible, Embedded and Embodied Interaction (pp. 245-246). [URL]

- [Technical Report] 3DFS: Deformable dense depth fusion and segmentation for object reconstruction from a handheld camera

Gupta, T., Shin, D., Sivagnanadasan, N., & Hoiem, D. (2016). 3dfs: Deformable dense depth fusion and segmentation for object reconstruction from a handheld camera. CoRR, arXiv:1606.05002.

- [Undergraduate Thesis] Twilight: Reconfigurable Self Organizing Office Lighting

Sivagnanadasan, N., Varma, R., (2017). Twilight: Reconfigurable Self Organizing Office Lighting (Undergraduate Thesis, University of Illinois Urbana Champaign, Urbana, IL, USA). Retrieved from [URL]

- [Presentation] PyTorch-TensorRT: Accelerating Inference in PyTorch with TensorRT

Dasan, N.,; Park, J; PyTorch-TensorRT: Accelerating Inference in PyTorch with TensorRT. Presented at GPU Technology Conference 2020, San Jose, CA. https://developer.nvidia.com/gtc/2020/video/s21671-vid

- [Presentation] TRTorch: A PyTorch/TorchScript Compiler Targeting NVIDIA GPUs Using TensorRT

Dasan, N. TRTorch: A PyTorch/TorchScript Compiler Targeting NVIDIA GPUs Using TensorRT. Presented at GPU Technology Conference 2020 Fall, San Jose, CA - [URL]

- [Conference Poster] TRTorch: A Compiler for TorchScript Targeting NVIDIA GPUs with TensorRT

Dasan, N. TRTorch: A Compiler for TorchScript Targeting NVIDIA GPUs with TensorRT. Presented at PyTorch Ecosystem Conference 2021, Menlo Park, CA - [URL]

TEACHING

COURSE ASSISTANT AND DEVELOPER - CS196 FIRST YEAR PROJECT CLASS — JAN - DECEMBER 2015

- Helped develop course curriculum for Freshman projects class, focusing on topics including modern development tools (Git, zsh, Emacs),development practices, project management and collaboration (Agile Development, Kanban, Pull Requests and Github) and intro-duction to topics in CS including ML, Graphics, Embedded Systems, Software Engineering, VR and more
- Students are placed in groups and select a project, they are assigned a CA who will act as a Project Manager, guiding the team during the semester. Lectures focus on important topics for CS students such as useful tools, potential specializations etc.
- Gave Lectures on Embedded Programming and basic hardware design and Machine Learning and CV and managed a team of 50 Course Assistants as they advised groups through the semester.

CS@ILLINOIS SAIL - INTRODUCTION TO DEEP LEARNING — APRIL 2018

- Developed and presented a tutorial on deep learning and using PyTorch for CS@ILLINOIS SAIL, a program for high school students in Illinois to be introduced to computer science topics
- Covered the basics of machine learning, the concepts behind gradient decent and how neural networks function, then guided students through developing their own networks to do a basic character recognition task using Google CoLab, PyTorch and GPUs
- Tutorial materials are open source and licensed under creative commons https://github.com/narendasan/intro_to_cnns