Vidya **Narayanan**

(+1) 412-789-0750 | vidyan@cmu.edu | vid8687.github.io | Vidya Narayanan

I am interested in improving computational design and fabrication ecosystems by building better techniques, interfaces and design languages.

Research Interests: Computational Textiles, Computational Design, Fabrication & Computer Graphics

Education

Carnegie Mellon University Ph.D. in Computer Science — Pittsburgh, USA

Thesis: Foundations for 3D Machine Knitting. Advisor: James McCann

My PhD thesis looks at how standard knitting machines can be viewed as a soft 3D printer, by separating *what* a user wants to make from *how* the machine executes a pattern program and building computational techniques to navigate between these representations. — 2016 - 2021 (Expected)

Indian Institute of Science Master of Science (Engg) — Bangalore, India

Thesis: Similarity of Scalar Fields. Advisor: Vijay Natarajan — 2012 - 2015

National Institute of Technology Bachelor of Technology, Computer Engineering — Surat, India — 2004 - 2008

Work Experience

Adobe Research Research Intern — San Jose, USA

Mentors: Michal Lukáč, Amanda Ghassaei, Danny Kaufman

I built a system to semi-automatically fold 2D dielines into 3D forms and contributed to the Adobe **Max '18 Sneak Demo *Fantastic Fold***. — May 2018 - Aug 2018

Disney Research Research Associate — Pittsburgh, USA

I worked on a high-level design language and compiler for machine knitting. — Aug 2015 - June 2016

NVIDIA System Software Engineer — Pune, India

I implemented and maintained DirectX graphics drivers for NVIDIA GPUs. — Jan 2011 - Jul 2012

Tata Elxsi Software Developer — Bangalore, India

Developed graphics applications for clients including EA Brightlight's official *Harry Potter and the Deathly Hallows* game. — Nov 2008 - Dec 2010

Publications

[1] Inverse Design Tool for Asymmetrical Self-Rising Surfaces with Color Texture
Jianzhe Gu, **Vidya Narayanan**, Guanyun Wang, Danli Luo, Harshika Jain, Kexin Lu, Fang Qin, Sijia Wang, James McCann, Lining Yao
Symposium on Computational Fabrication, 2020

[2] Representing Crochet with Stitch Meshes
Runbo Guo, Jenny Lin, **Vidya Narayanan**, James McCann
Symposium on Computational Fabrication, 2020

[3] Visual knitting machine programming
Vidya Narayanan, Kui Wu, Cem Yuksel, James McCann
ACM Transactions on Graphics (TOG) SIGGRAPH 2019

[4] Efficient Transfer Planning for Flat Knitting
Jenny Lin, **Vidya Narayanan**, James McCann
Proceedings of the 2nd ACM Symposium on Computational Fabrication, 2018

[5] Automatic Machine Knitting of 3D Meshes
Vidya Narayanan, Lea Albaugh, Jessica Hodgins, Stelian Coros, James McCann
ACM Transactions on Graphics (TOG) 2018

[6] An exploratory framework for cyclone identification and tracking
Akash Anil Valsangkar, Joy Merwin Monteiro, **Vidya Narayanan**, Ingrid Hotz, Vijay Natarajan
IEEE transactions on visualization and computer graphics IEEE, 2018

[7] A Compiler for 3D Machine Knitting
James McCann, Lea Albaugh, **Vidya Narayanan**, April Grow, Wojciech Matusik, Jennifer Mankoff, Jessica Hodgins
ACM Transactions on Graphics (TOG) SIGGRAPH 2016

[8] Distance between extremum graphs
Vidya Narayanan, Dilip Mathew Thomas, Vijay Natarajan
IEEE Pacific Visualization Symposium, 2015

Talks

An Introduction to 3D Machine Knitting Computational Fabrication Seminar — virtual April 2021
Visual Knitting Machine Programming SIGGRAPH — Los Angeles, USA August 2019
Automatic Machine Knitting of 3D Meshes SIGGRAPH — Vancouver, Canada July 2018
Comapring Scalar Functions with Extremum Graphs Pacific Vis — Hangzhou, China April 2015

Service

Teaching
TA for 15-462 (CMU) Computer Graphics (taught by Keenan Crane) Fall 2020
TA for 15-300 (CMU) Research & Innovation in CS (taught by Jonathan Aldrich & Bogdan Vasilescu) Fall 2019
Guest Lecture for 15-869 (CMU) Algorithmic Textiles Design: Introduction to Machine Knitting (Spring 2020) and Making 3D shapes with knitting, weaving and folding (Spring 2021)
Knitout Office Hours: held weekly for introducing machine-knitting using knitout (with CMU Textiles Lab) 2018 onwards

Mentoring
Michelle Guo (Undergraduate Researcher, CMU) Tile-based visualization and design of crochet patterns (Summer 2020)
Aparajita Haldar (Undergraduate Researcher, BITS Pilani Goa) Comparing contour-tree algorithms (IISc, Summer 2015)

Reviewing
SIGGRAPH (2020-21), SIGGRAPH ASIA(2019-21), TEI(2019), SCF(2018,20)

Committees
Posters Chair, Symposium on Computational Fabrication 2019, Pittsburgh, USA
Student Member, Doctoral Review Committee (2017-21), Computer Science Department, CMU
Student Member, PhD Admissions Committee (2020), Computer Science Department, CMU