

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 printers, 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

May 2018 - Aug 2018

Max '18 Sneak Demo Fantastic Fold.

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

Comparing 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
