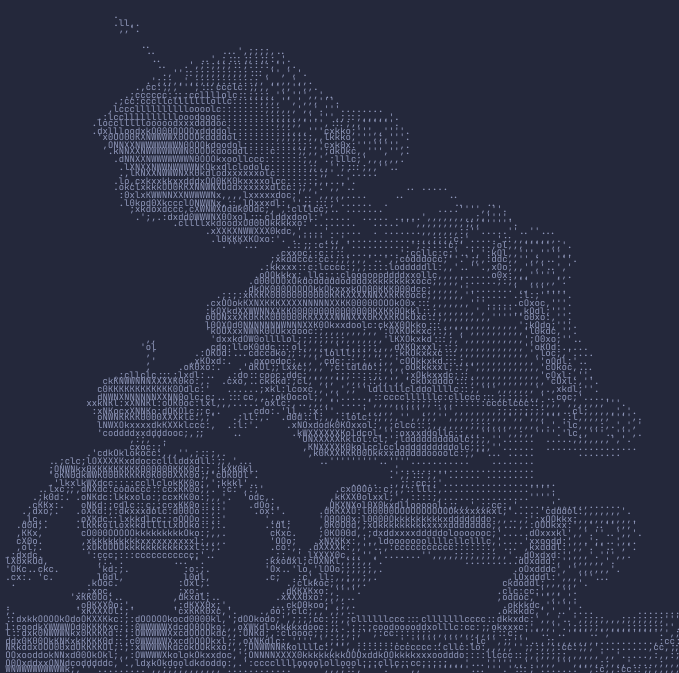


user@saahas-pc :~\$ neofetch --ascii\_colors 5 6 4



UserSaahas Yechuri  
LocationSan Francisco, CA  
Contactsaahas@gatech.edu | 484-983-4127  
Linksgithub/Suputra | linkedin/saahas | youtube/@saahasY  
BioDriven engineer working on the boundary between hardware and software. Experienced with designing and building mechatronic and robotic systems, building and scaling data analysis pipelines, and FPGA design. In my free time, I love to read (big fan of hard sci-fi and the future of humanity), bike, and hike!

```
$ grep -A 2 "experience" ~/career.md | less

# Hardware/Software Engineer @ Zoox

Jan 2022 - Present | Foster City, CA

> Designed and built a vehicle network emulator to simulate network traffic on real hardware. Developed hardware, firmware, and software for data collection, emulation, and validation.

> Analyzed 100GB+ of vehicle network data using Python; extracted characteristics into 'streamdb' files that are now used company-wide for data flow analysis and network security investigations.

> Designed a 4-layer passthrough board to inject errors into 100M/1G automotive Ethernet lines; matched BaseT impedance standards. Uncovered critical issues with missing data and fault detection.

> Optimized network data analysis speed using the MapReduce paradigm and designed data pipelines for Zoox's compute cluster.

> Utilized skills in hardware design, firmware development, software engineering (Python, C/C++), and network protocols to create the 'Network Systems Tester' (NST) emulator platform.

> Designed Test setups and Test Cases to verify the whole Time Synchronization system on Vehicle - including the Grandleader, Boundary Clocks, and Endpoints. This involved creative test setups, packet analysis, and experimentation with plotting / data analysis.

> Maintain scripts that verify functionality of Telecommunications and Time Synchronization on the manufacturing line.

# Undergraduate Researcher @ Bio-Robotics Lab

Aug 2022 - Sep 2023 | Atlanta, GA

> Developed FPGA-based hardware accelerators for Homomorphic Encryption on a Xilinx Zynq ZC702, focusing on key generation, encryption, and large integer arithmetic. Created a novel key-switching scheme for faster homomorphic operations.

> Designed and optimized Verilog modules, including an implementation of the Miller-Rabin primality test, pseudorandom number generators based on LFSRs, and efficient modular exponentiators.

> Interfaced FPGA fabric with Zynq PS using AXI IP cores and C code. Integrated ADC modules to process real-world sensor data securely.

> Extensively debugged and validated designs using Xilinx Vivado's Simulation Suite and Integrated Logic Analyzer (ILA) on both simulated and real hardware.

# Student Assistant @ STEM@GTRI

June 2021 - July 2021 | Atlanta, GA

> Mentored 10 Students in the development of an autonomous robotic arm with computer vision and high level control.

> Started from basic Python lessons, and got all the way to control using DH-parameters, Finite State Machines, and Computer Vision.

> Wrote 25+ example scripts and 15+ lessons to help facilitate student understanding of various topics.

> Wrote a ROS package to integrate computer vision, inverse kinematics, and control into a simple template stack for the students.

# R&D Engineering Intern @ nth Solutions LLC

Feb 2018 - Aug 2019 | Exton, PA

> 3D Modeled and printed parts for a variety of applications, including product enclosures, accessories, and test rigs. Designed and maintained 25+ 3D printed models, each with 10+ iterations.

> Wrote documentation and drew diagrams for patents. Experienced with technical writing and research.

> Programmed and range tested ESP8266 and LoRa modules to add IoT functionality to a pre-existing product.
```

```
$ skills list --format=compact | bat -p --style=grid

Programming
Python
C
C++
Verilog
CUDA
JavaScript
Julia
Scala
R
Linux/Unix
bash
Bazel
OpenCV
PyTorch
Polaris
Matplotlib
Scipy
Numpy

Domain Knowledge
Networking & OSI
TCP/IP Stack
Ethernet 10-4
PTP/NTP
DDS
Robotics & Control
IK/FK
D-H Parameters
PID Control
RL for Control
Computer Vision
Calibration
CNNs
SLAM
Data Processing
MapReduce
Distributed Systems

Tools & Software
Hardware Design
Vivado/Vitis
Altium
Simulation
MATLAB/Simulink
GTKWave
Isaac Lab/Sim
CAD/CAM
Inventor
SolidWorks
Onshape

Practical Skills
Fabrication
3D Printing (FDM/SLA)
Laser Cutting
Wood/Metal shop tools
Welding
Electronics
THT/SMT Soldering
PCB Assembly
Test Equipment
```

```
$ tree ~/projects --charset=ascii -L 3

/projects
├── FPGA Based Ethernet MAC/PHY
│   ├── description.txt
│   │   └── Designed and Tested Verilog modules for a Simple 10BaseT MAC and PHY following IEEE 802.3 to transmit fixed Layer 2 Ethernet packets. Debugged and Tested using Verilator and gtkwave. Working on expanding to Layer 3+
├── Chess Robot
│   ├── description.txt
│   │   └── Using an old 3d printer frame, built a chess robot. Designed motor control circuits, wrote Firmware for low level control, and code for move detection using fiducial markers (Apriltags) and generation. Demo videos on Youtube.
├── Gyro-Boat
│   ├── description.txt
│   │   └── Built a model boat stabilized by a gyroscope, inspired by Sperry's Gyro-Stabilizer. Demo videos on Youtube.
└── 3 directories, 6 files
```

```
$ cat ~/awards | column -t -s ';' | sed '1,2s/./-/g'

-----
Awards & Recognition
-----
Year  Award                               Organization  Details
-----
2024  Hack for Social Impact (1st Place)      UNCCD         Developed "Arboren" to help UN analysts visualize and analyze desertification data. Presented at COP 16 in Riyadh.
2023  SII2024 Conference Paper                 IEEE          FPGA-based sensor encryption system paper accepted to Symposium on System Integration in Ha Long Bay, Vietnam.
2022  President's Undergraduate Research Award (PURA)  Georgia Tech  Funded to do research on Homomorphic Encryption with FPGAs. Mentored a student on FPGA development, and presented findings at a research symposium.
2021  NASA SpaceApps Best Use of Technology         NASA          Developed novel space component separation system, used electromagnetic and hydraulic principles to apply a 16W preload.
2020  MIT COVID-19 Challenge Winning Team         MIT           Created "COValert" SMS chatbot for rural COVID triage for areas without internet access.
-----
```

```
$ ssh guest@uspto ls -l ~/patents | grep -L "Saahas Yechuri" | bat --style=grid

File: US-11287348-B2.pdf
Tire Balance Measurement: Apparatus for measuring imbalance forces of a tire/hub assembly of a vehicle during motion of the vehicle
(Issued Mar 29, 2022)
File: US-10701266-B2.pdf
Video File Reader: Method for reading out contents of a video file having a predefined video file format
(Issued Jun 30, 2020)
File: US-10469750-B1.pdf
Motion Data Embedding: Method for embedding motion data of an object into a video file to allow for synchronized visualization of the motion data
(Issued Nov 5, 2019)
File: US-10284752-B1.pdf
Video-IMU Synchronization: Method for determining a start offset between a video recording device and an inertial measurement unit
(Issued May 7, 2019)
```

```
$ cat education.yml

institution: Georgia Institute of Technology
degree: BS in Mechanical Engineering
gpa: 4.0
coursework:
  - Control of Dynamic Systems
  - Robotics
  - Mechatronics
  - Machine Design
  - System Dynamics
  - Thermal and Fluids Laboratory
  - Experimental Methods
  - Heat Transfer
  - Fluid Mechanics
  - Thermodynamics
  - Numerical Methods
  - Deformable Bodies
  - Dynamics
  - Statics
  - Digital/Analog Circuits
```

user@saahas-pc :~\$ █