KARTIK NAGPAL

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EDUCATION

THE UNIVERSITY OF TEXAS AT AUSTIN

BACHELORS OF SCIENCE IN COMPUTATIONAL ENGINEERING	MAY 2022
CERTIFICATE IN APPLIED STATISTICAL MODELING	MAY 2022
CERTIFICATE IN SCIENTIFIC COMPUTATION	MAY 2022

GPA: 3.8

RELEVANT COURSEWORK: FEEDBACK CONTROL SYSTEMS, LINEAR SYSTEM ANALYSIS, DYNAMICS, ADVANCED SCIENTIFIC COMPUTATION, SPACECRAFT DYNAMICS, SOFTWARE ENGINEERING AND DESIGN, ENGINEERING COMPUTATION

EXPERIENCE

UNDERGRADUATE RESEARCHER – CONTROLS AND AUTONOMY WITH DR. TOPCU — AUG 2021 – PRESENT

- Developing a specialized solver for autonomous path optimization problems with many convex constraints
- Translating mathematical algorithm to MATLAB CVX, YALMIP, JUMP code to develop ground truth models
- Reframing mathematical algorithm to optimized parallel C/C++ code to allow for planning of Unmanned Drone pathing in real time
- Separately, designed scripts to autogenerate high poly simulation environments to test self-driving car pathing

AUTOMATION AND SYSTEM ENGINEERING INTERN – CACI INTERNATIONAL — JUNE 2021 – AUG 2021

- Designed, built, and documented entire software package for Boeing P-8 Poseidon aircraft's logging and communication systems
- Became the subject matter expert on WILMA US Navy product, and oversaw code revisions & deployment of new versions

GNC CFD-SIMULINK RESPONSIBLE ENGINEER – TEXAS ROCKETRY ENGINEERING LAB (TREL) — OCT 2019 – JUNE 2021

- Oversaw a team of 6-7 members which carries out all kinds of analysis for other teams within the organization
- Utilize construct dynamics and control models in MATLAB/Simulink to simulate trajectories and resource usage (1DOF, 4DOF, 6DOF)
- Employ ANSYS Fluent to perform CFD simulations on the rocket body and fin designs to find aerodynamic and thermal characteristics
- Advised and helped implement a NASA Trick 6 degree of freedom (6DOF) rocket propagation simulation

AUTOMATION AND SYSTEM ENGINEERING INTERN – CACI INTERNATIONAL — JUNE 2020 – AUG 2020

- Wrote, reviewed, and documented a series of build-automation scripts, utilizing bash scripts and git
- Rebuilt a user control application in C, maximizing for compute speed while adhering to UI/UX guidelines

UNDERGRADUATE RESEARCH ASSISTANT – ORBITAL MECHANICS WITH DR. MORIBA JAH — AUG 2018 – PRESENT

- Revised current research group's codebase on Orbital Determination and computational estimation algorithms
- Integrated database inputs to localize orbital profile information to illustrate homogenous data values, calculations, path accuracies
- Employed a series of numerical approximations for orbit prediction, followed by thorough residual calculation and corrections
- Utilized Python for data extraction, data organization, NLP analysis for studying UN registration of international satellite objects
- Published http://dx.doi.org/10.26153/tsw/11754 and presented the paper at the 7th Annual Space Traffic Management Conference

TECHNICAL SKILLS

Programming Skills: C++, C, Python, MATLAB, Simulink, Java, Fortran, HTML, CSS, JavaScript

Technical Tools: CVX, YALMIP, MOSEK, GUROBI, NASA Trick, Git, OpenFOAM, Orekit, Android Dev, SQL, NoSQL, Docker, NumPy, SciPy, SciKit-Learn, Theano, TensorFlow, VMs, Bash, Vim, WSL, Linux, Google Cloud Services, Microsoft Cognitive Services, Azure, Neo4j, Cypher

Engineering Technical Skills: Autodesk Inventor, Solidworks, LabVIEW, ANSYS, Fluent

Certifications: Certification in Microsoft Word, PowerPoint, Excel, Access, and Adobe Photoshop; AGI STK Level 1 Certification

Additional Characteristics: US Citizen, Co-founder of EconBusters.org, Google Local Guide, Member of SIAM, ACM, ISSS, and UT-ICPC