Dimitris Chamzas

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Personal Website

You can take a look at my most recent robotic projects at https://jimas95.github.io/portfolio/.

Education

- **Northwestern University** — Evanston, US
  Attending MS program in robotics, current grade 3.925/4 GPA — *Sept. 2020*
- **Member of the Technical Chamber of Greece** — Athens, Greece
  certification — *Aug. 20, 2020*
- **University of Patras** — Patra, Greece
  Integrated Master in Electrical and Computer Engineer(MSc Equivalent) — *Oct.2013- Oct.2019*
  - Grade cumulative average **7.1/10** equivalent to **3.1/4.0** GPA using WES[1] GPA calculator
  - Diploma Thesis (in Greek): *Advanced Techniques of Human-Machine Interaction in Virtual or Augmented Reality Environments* (**demo video** [2])
  - Relevant courses: Robotics, Computer Graphics and Virtual Reality, Control Theory, Signals & Systems, Databases & Algorithms, Linear Algebra, Applied Mathematics
- 1^{st} **High School of Xanthi** — Xanthi , Greece
  High School Diploma — *Sep. 2010 - June 2013*
  - Graduated with **17.9/20** cumulative average, and received praise(over 17) each year

Work and Research Experience

- **Greek Army** — Xanthi, Greece
  Army Engineer — *Oct. 2019 - July 2020*
  - Full-filled Mandatory Service for Greek Army
- **RoboticsClub,** http://robotics-club.upatras.gr — Patra, Greece
  Robotics Engineer — *Sep. 2016 - June 2019*
  - Won many times 1st prize at universal ROBOTEX contest in the category "Following Line"(2015-2018) and "Following Line Enhanced"(2016-2018)
  - Designed and manufactured PCB boards to control the robots
  - Developed robotic algorithms for micro-controllers with limited resources(teensy)
  - Developed an online simulator to test the behaviour of the robot in different environments
- **Athena Research Center, Clepsydra Center** (clepsydra.ipet.gr) — Xanthi, Greece
  Student Intern, Contract no 708 — *Aug. 1, 2019 - Oct. 31, 2019*
  - Worked on SRACH-3/Subcontract i-3D-Icons
  - Subject of work *3D Digitization and Augmented Reality using Specialized Hardware*
- **Irida Labs Center,** https://www.iridalabs.gr — Patra, Greece
  Student Intern — *June 2017 - Sept.2017*
  - Implementation of a VSLAM algorithm with a monocular camera
  - Familiarization with depth-images processing techniques
- **Athena Research Center,** http://iguide.ceti.gr — Xanthi, Greece
  Student Intern, Contract no 622 — *August 3, 2015 - October 31, 2015*
  - Worked on iGuide a social enriched mobile guide

[1] https://applications.wes.org/igpa-calculator/igpa.asp
[2] www.youtube.com/watch?v=OyU4GOLoXnA

– Worked on text to speech narration in Greek, English and Bulgarian Languages

Publications

1. Dimitris Chamzas and Konstantinos Moustakas, "3D Augmented Reality Tangible User Interface using Commodity Hardware", *in 15th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications* (GRAPP), Valletta, Malta, 25-27 February 2020, *(Accepted as sort paper with a poster presentation, sort listed for best papers)* [3]

2. Dimitris Chamzas, Constantinos Chamzas and Konstantinos Moustakas, "cMinMax: A Fast Algorithm to Find the Corners in a N-dimensional Convex Polygon",, *accepted for presentation in 16th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (GRAPP), Online, 8-10 February 2021*

Software -Hardware Skills

Programming Languages: Assembly, C, C++, C#, Python, Java, Matlab

Operating Systems: Linux, ROS, Android, Windows

Micro-Controllers: Arduino, Rasberry Pi, PIC32

Designing: PCB, 3D Printing

Other: OpenCV, OpenGL, GPU multiprocessing, UNITY, Vuforia

Notable University Projects

- Implemented a project[4] using a mobile platform robot where a robotic arm is attached to it. The robot sawback is able to navigate in an room that was already mapped, detect objects, pick them and place them inside box containers, shelves or drawers. ROS moveIT and velodyne lidar sensor where used.
- Implemented a project[5] using robot Baxter where we used both hands of the robot to build a tower of cups. ROS, moveIT and AprilTags where used. I had also the role of the leader/coordinator in this project.
- Implemented a project[6] using the turtlebot for autonomous exploration. The robot will start autonomously navigating in an environment until it explores/maps all of it. Frontier exploration was implemented for the exploration and gmapping for simultaneous localization and mapping (SLAM)
- Simulation of Multi-Agent navigation[7] for real-time execution with reciprocal velocity obstacle and collision-free.
- Implemented a Simulator[8] as an undergraduate for the Robotics Club[9]. I used Java and from the simulator we were able to communicate with the robot via Bluetooth or compile and execute the code from the computer. simulating mazes, solving maze, dynamic simulation, setting PID gains, linearization of sensors or SLAM, data visualization and saving where some of the capabilities of the simulator.
- Implemented an algorithm which creates the point cloud from RGBD images
- Developed an agent that can play on online platforms the game called Score Four initialize with min-max search and subsequently with neural networks

[3] https://www.dropbox.com/s/vntdoq7al5hwti2/paper1Submitted.pdf?dl=0
[4] https://jimas95.github.io/portfolio/project_sawback_/index
[5] https://jimas95.github.io/portfolio/cup_tower_/index.html
[6] https://jimas95.github.io/portfolio/project_turtle_slam_/index
[7] https://jimas95.github.io/portfolio/project_multi_agent_/index
[8] https://jimas95.github.io/portfolio/maze_simulator_/index
[9] http://robotics-club.upatras.gr/

- Constructed the model of an IRB-52 industrial robot and derived the Denavit-Hartenberg Parameters, Inverse Kinematics, Jacobian Matrix, Singularities, and a PD controller to follow a given trajectory.
- Leader-following formation and beading control of networked quad-copters
- Implemented a real-time Low Cost Augmented Reality System with a 3D tangible interface, using a smart mobile, a Raspberry Pi 4, a Raspberry Camera and a Structure Sensor (part of my Diploma Thesis)
- Developed a full 3D city simulation environment with multiple computational geometry algorithms such as collision detection, ray tracing, Delaunay triangulation, and gravity

MOOCS

- An Introduction to Interactive Programming in Python (Rice University) course1 course2
- Artificial Intelligence (Berkeley University)course
- Learn Ethical Hacking course

Languages

English: MICHIGAN CERTIFICATE OF PROFICIENCY, Level: C2(Excellent)

Reference

Matthew Elwin: Assistant Professor of Instruction of Mechanical Engineering, Northwestern University, Illinois
Phone number: +1 847 491 3741
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Todd Murphey: Professor of Mechanical Engineering,Northwestern University, Illinois.
Phone number: +1 847 467 1041
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Kostantinos Moustakas: Associate Professor at Electrical and Computer Engineering Department, University of Patras, Greece.
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Anestis Koutsoudis: Principal Researcher at Athena Research and Innovation Centre, Xanthi Greece.
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Other Skills/Interests

Sailing: Sailing the Aegean Sea since 12 years old. Acquired Sailing diploma in 2012. Have won multiple medals and prizes in competitive sailing in the Ionian Sea

Water-polo: Won multiple medals both with my team and as swim athlete

Skiing: Skiing every winter for the last 10 years

Scout: Active member of the Scout Community for more than 15 years

First aid: Acquired certification at first aids from Hellenic Red Cross in 2016