

Jad Nohra

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Summary

I am a seasoned software engineer with 20 years of software development experience, including 4 years of team building and leadership. My specialties include simulation for autonomous vehicles, rigid-body dynamics and numerical algorithms. As a leader, I have a genuine interest in people and strive for brutally honest, open and collaborative relationships.

I am the co-author of a patent, and the author of a couple of technical articles:

- <https://patents.google.com/patent/US10672159B2>, Anchor graph
- <https://scholar.google.com/citations?user=0pae59AAAAAJ>, Articles

I share my work on github whenever possible, per example:

- <https://github.com/jadnohra/daisy>, a traffic simulator
- <https://github.com/jadnohra/PaCoS>, a concurrency determinism simulator
- https://github.com/jadnohra/hinges_py, a rigid-body-dynamics simulator
- <https://github.com/jadnohra/trace>, a real-time data plotting tool

I am passionate about mathematics, and engage in math MS courses as my time allows. In that context, I share my study notes:

- https://github.com/jadnohra/tag_export
- <https://github.com/jadnohra/TheNotes>

Places I have worked at include:

- Simulation for Autonomous Driving at Argo AI, formerly Audi/Autonomous Intelligent Driving
- Rigid-body dynamics R&D at Havok and Microsoft
- Game AI at Guerrilla Games and AIGameDev
- Game development at various companies

Experience



Staff Software Engineer and Team Lead - Virtual Testing of Autonomous Vehicles

Argo AI

Jun 2020 - Present (10 months +)

Leading a group of 6 engineers located in Munich, with a focus on Simulation. This group operates within a larger virtual testing team of 16 engineers in multiple locations.

I contribute by providing thought leadership, mentoring, planning, design, design reviews, code and documentation conventions, knowledge sharing, and code development.

Specialist topics include validation of simulation models, design of virtual test tooling, of the core simulator and of domain specific languages.



Simulation Area Tech Lead - Autonomous Vehicles

Autonomous Intelligent Driving GmbH

Apr 2018 - Jun 2020 (2 years 3 months)

Enabling autonomous driving through virtual testing, simulation and tooling.

Built and led 4 simulation-related teams with a total of 16 superb engineers (50% PhD, 13 years experience on average), until an acquisition by Argo AI in the context of a VW-Ford partnership.

Topics were:

- SIL framework for full stack replay and simulation
- Traffic simulation
- Environment and sensor simulation
- Scenario-based diagnostics and tooling

Tasks included:

- Vision, strategy, roadmap, planning and execution
- Team building, empowering people
- Technical leadership, engineering management
- Getting hands dirty and things done, code or otherwise
- Under-the-carpet prototyping
- Technology scouting and partner management



Lead 'Destruction' Simulation (R&D) - Havok

Microsoft

Jun 2017 - Mar 2018 (10 months)

Havok Destruction:

- Determination of clear functional and non-functional requirements through data, interviews and surveys
- Identification of technically problematic features by technical proof
- Development of roadmap and presentation to stakeholders
- Maintenance through bug-fixing



Real-time 'Physics' Simulation Specialist (R&D) - Havok

Microsoft

Dec 2015 - Jun 2017 (1 year 7 months)

Physics simulation, HoloLens. Built the first ever prototype of a rigid-body-dynamics simulation running on the HoloLens device.



Real-time 'Physics' Simulation (R&D)

Havok

Jun 2011 - Dec 2015 (4 years 7 months)

Havok Physics (Leading real-time rigid-body dynamics middleware)

- Low-level optimization and vectorization
- Multi-threading

- Network simulation
- Geometric queries
- Numerical analysis and numerical optimization (linear programming)

Consultant in Applied Mathematics, IMU sensors

Guided Knowledge

Jul 2015 - Sep 2015 (3 months)

Consulted 'Guided Knowledge' in the topic of nonlinear optimisation as applied to IMU sensor data. The result was the writing of a technical internal report that was used to steer certain decisions. Additionally, I wrote related python based tools.



Senior AI programmer

Guerrilla

Sep 2009 - Jun 2011 (1 year 10 months)

Killzone 3 (Acclaimed Playstation3 FPS):

- AI and animation motion planning
- Navigation and behavior for humanoids, land and air vehicles.
- Multiplayer AI bots
- Automated navigable space generation and tools
- Automated AI testing
- Maya tools



Freelance Programmer (AI R&D)

AiGameDev.com

Dec 2008 - Sep 2009 (10 months)

Motion Graphs, Animation, Locomotion Planning, Reinforcement learning, A*, Hierarchical A*, Terrain Clustering, low level AI systems (logging, assertion, smart pointers)



Senior Software Engineer

Sixteen Tons GmbH

Apr 2008 - Oct 2008 (7 months)

Nintendo DS graphics engine, optimization, gameplay, effects, audio. Incomplete information stochastic Board game AI.



Programmer

Kimera Studios (Indie Game company)

2006 - 2008 (3 years)

<https://github.com/jadnohra/World-Of-Football>

Design and implementation of full soccer game, low level systems, Template libraries, math libraries, logging, custom micro-collision physics engine, sound system, fixed function rendering, mesh loading, mesh transforms, skeletal animation system, animation blending, neural network ball trajectory estimation, tactical pass interception, goalie behavior based on online real goalie coaching websites,

exact non probabilistic goalie saves, data driven scenes, scene graph, space partitioning (KD, BSP, Oc, Quad trees) ...



Senior Software Engineer

ACT-Kern GmbH

2002 - 2003 (2 years)

OpenGL/DirectX wrappers for custom stereoscopic hardware, Stereoscopic software development including video streaming.



Software Engineer, Quality Engineer

Whitestein Technologies

2001 - 2002 (2 years)



Software Engineer

Gaming Logix

1999 - 2001 (3 years)

Online Casino 2D engine development in both C++/DirectX and java, server side development.

Education



Emporia State University

MS, Mathematics

2018 - 2022

Ongoing (Distance Education)



American University of Beirut

BE, Computer and Communications Engineering

1995 - 1999

Licenses & Certifications



Machine Learning A-Z™: Hands-On Python & R In Data Science - Udemy



Deep Learning Prerequisites: Logistic Regression in Python - Udemy



The Complete Masterclass On Essential Management Skills - Udemy

UC-2XBG2Z02

Skills

Physics Simulation • Artificial Intelligence • Mathematics • C++ • Game Development • 3D Math • Technical Writing • Creative Writing • Game Programming • Gameplay