Michael Cerny Green

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Website: http://mikecgreen.com | Google Scholar: Michael Green

EDUCATION:

New York University, New York NY
PhD – Artificial Intelligence and Video Games - GPA: 3.83 *December 2021*
Lehigh University, Bethlehem PA
B.S. – Computer Science and Business, B.A. – Classical Civilizations, GPA: 3.68 *May 2016*
Temple University, Rome Italy
Study Abroad Semester – *Italian Art*, GPA: 3.59 *Fall 2014*

PROFICIENCIES AND SKILLS:

Languages/Libraries: Python, C#, Java, Javascript, HTML, Scala, Pandas/Numpy, Plotly, React, Flask
AI/ML: Pytorch, Pytorch-Lightning, Evolutionary Algorithms, Tree Search, Deep Learning, Reinforcement Learning
Cloud/Infra: AWS (S3, Batch, EC2, DynamoDB, Lambda, Cognito), Docker, Kubernetes

WORK EXPERIENCE:

Origen.AI, New York, NY Current Employer
Artificial Intelligence Software Manager *April 2020-Present*
Artificial Intelligence Researcher *November 2018-April 2020*
Founding employee of a private, AI-applied technology platform startup developing models for the energy industry.
- Successfully managed and executed platform deployment projects, capturing ~$300k for company revenue in FY 2020.
- Effectively pitched to investors to close ~$1m in seed funding in FY 2021.
- Responsible for the creation and maintenance of OriGen's artificial intelligence research and production framework using Pytorch and Pytorch-Lightning, accelerated computing using NVIDIA, containerized with Docker, and written in Python.
- Enabled the framework to be backend-agnostic, allowing to be plugged directly into the OriGen Proteus platform for production use, while also being compatible for standalone-usage with cloud-infrastructure such as AWS, GCP, and Azure.
- Built a scalable AI/ML research pipeline using Neptune, AWS Batch, and AWS S3 for rapid model training/validation/testing iteration on multi-gpu instances.
- Directly engaged with clients to transform platform use cases into engineering and research requirements.
- Submitted paper detailing a new network paradigm to solve non-linear partially differentiable equations using attention mechanisms and residual calculations.

Imbellus, Inc, Los Angeles, CA *May-August 2018*
AI/ML Engineer
~25 employee personal assessment startup.
- Worked on a 4-employee team doing research and development using tree search, evolutionary strategy, and reinforcement learning.
- Built an evolutionary level generator to dynamically train reinforcement learning AI agents to play assessment levels.
- Published research at the Reinforcement Learning in Games workshop at AAAI 2019.
- Optimized internal processes to facilitate AI creation and use for the software and research teams.

Tri-Champion Development, Bethlehem, PA *June 2014-May 2016*
Founder
Private, 4-person video game development group.
- Managed the creation of the Stay Alive series, a pair of spaceship shooter games.
- Participated in the Global Game Jam (January 2015), a 72 hour mobile video game contest to build Kairos Manor, a thriller puzzle game.
- Competed in mobiLehigh, Lehigh University's mobile video game creation contest.
- Produced Cubes, a 3d reflexive dodging game, winning the *"People's Choice Award"* out of 25 games.

PricewaterhouseCoopers, New York, NY, *Cybersecurity Consultant Intern* *June-August 2016*
Lutron Electronics, Inc., Coopersburg, PA, *Software Engineering Intern* *May-August 2015*
FedEx Corporation – FedEx Services, Memphis, TN, *IT Information Security Intern* *June – August 2014*
Retrans, Inc. Precision Logistics, Memphis, TN, *IT Software Development Intern* *May - July 2013*

RESEARCH AND PROJECTS:

Automatic Video Game Tutorial Generation *July 2017-Present*

Using a novel graph-based rule representation for video game rules, creating AI that can generate tutorials for any video game, starting with games in the GVGAI framework.

- [2017] "Press Space To Fire": Automatic Video Game Tutorial Generation – Michael Cerny Green, Ahmed Khalifa, Gabriella A. B. Barros, and Julian Togelius – EXAG Workshop at AIIDE 2017.
- [2018] Generating Levels That Teach Mechanics - Michael Cerny Green, Ahmed Khalifa, Gabriella A. B. Barros, Andy Nealen, and Julian Togelius - PCG Workshop at FDG 2018
- ***[2018] AtDelfi: Automatically Designing Legible, Full Instructions for Games - Michael Cerny Green, Ahmed Khalifa, Gabriella A. B. Barros, Tiago Machado, Andy Nealen, and Julian Togelius - FDG 2018
- [2019] Intentional Computational Level Design - Ahmed Khalifa, Michael Cerny Green, Gabriella Barros, Julian Togelius - IJCAI 2019
- [2019] Automatic Critical Mechanic Discovery Using Playtraces in Video Games - Michael Cerny Green, Ahmed Khalifa, Gabriella A. B. Barros, Tiago Machado, and Julian Togelius - FDG 2019
- [2020] Mech-Elites: Illuminating the Mechanic Space of GVG-AI - M Charity, Michael Cerny Green, Ahmed Khalifa, and Julian Togelius - FDG 2020
- [2021] Game Mechanic Alignment Theory and Discovery - Michael Cerny Green, Ahmed Khalifa, Philip Bontrager, Rodrigo Canaan, and Julian Togelius - FDG 20201

Automatic Video Game Play-testing Agents *September 2016-December 2018*

Using evolved Monte Carlo Tree Search AI and player modeling to automatically play-test video game levels for Minidungeons 2, a 2-D rogue-like, dungeon crawler.

- [2018] Automated Playtesting with Procedural Personas through Evolution Based MCTS - Christoffer Holmgard, Michael Cerny Green, Antonios Liapis, and Julian Togelius - TOG 2018
- [2019] Two-step Constructive Approaches for Dungeon Generation - Michael Cerny Green, Ahmed Khalifa, Athoug Alsoughayer, Divyesh Surana, Antonios Liapis, and Julian Togelius - PCG Workshop at FDG 2019

Deep Learning/Reinforcement Learning *May 2019-Present*

A collection of various projects involving Deep Learning or Deep Reinforcement Learning research.

- [2019] Evolutionarily-Curated Curriculum Learning for Deep Reinforcement Learning Agents - Michael Cerny Green, Benjamin Sergent, Pushyami Shandilya, and Vibhor Kumar - RL Workshop at AAAI 2019
- [2020] Bootstrapping Conditional Gans for Video Game Level Generation - Ruben Rodriguez-Torrado, Ahmed Khalifa, Michael Cerny Green, Niels Justesen, Sabastien Risi, and Julian Togelius - COG 2020
- [2021] Physics-informed Attention-based Neural Network for Solving Non-linear Partial Differential Equations - Ruben Rodriguez-Torrado, Pablo Ruiz, Luis Cueto-Felgueroso, Michael Cerny Green, Tyler Friesen, Sebastien Matringe, and Julian Togelius - Arxiv

***Best Paper Award

25+ published papers available upon request. Please see Google Scholar for more.

ORGANIZATIONAL EXPERIENCE:

Programming Committees

Foundations of Digital Games (FDG)	2018, 2019, 2020, 2021
Conference on Games (COG)	2019, 2020, 20201
Procedural Content Generation Workshop at Foundation of Digital Games (PCG)	2019, 2020, 20201
Portuguese Conference on Artificial Intelligence (EPIA)	2019
User Experience of Artificial Intelligence (UXOFAI)	2019, 2020, 20201

Other

Local Co-Chairman of the AI for Games Summer School	2019