Omer Shapira - Engineer, Researcher

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Engineer and Researcher, focused on Human-facing problems.
Interests include: Computer Vision, Rendering, Displays, Human-$\{Computer, Robot, Human\}$ Interaction, Haptics, Perception and Recommendation Systems. I thrive in multidisciplinary technical teams. Extensive experience in production (Software, Games, VR, Film+TV, Interactive Installations). Currently interested in long-term impact on HCI.

Employment

2016 - Now **NVIDIA** *Omniverse & Simulation Technology.*
Major Contributions:

- ▽ **Engineering and Product Manager, Omniverse XR**. Shipped Omniverse Create XR, first-in-market raytraced VR engine. Built the Omniverse XR team. Own the Omniverse XR Roadmap and codebase. Built infrastructure to bring Omniverse into VR performance. Drove features from NVIDIA's flagship technologies, such as CloudXR and Deepsearch, to fit product requirements. Contributed a scripting framework and developer tools for interactivity. Delivered product success for key markets: AEC and Manufacturing.

- ▽ **DriveSim**. Led the tools transition of NVIDIA's autonomous vehicle simulator from 3rd party engines to Omniverse. Solved workflows for large world content generation pipelines with DCC tools and microservices. Maintained compatibility between 2 engines through the transition.

- ▽ **Isaac Data Studio (now Omniverse Replicator)**. Pioneered NVIDIA's synthetic data generation framework; Built to solve a "10-year problem" in VR: generating rich semantic scene understanding. The SDG vertical is now one of three key verticals in Omniverse.

- ▽ **Isaac**. NVIDIA's robotics RL platform. Main contributions: Human-Robot Interaction research - training and debugging robot behavior in VR. Demo of domain transfer from Game Engine to physical robot playing dominoes shown at *SIGGRAPH 2017*.

- ▽ **NVIDIA XR Research**. Produced research and patents in Redirected Walking and Kinesthetic Haptics. Significant contributions in display and shared presence research.

2015 - 2016 **Fake Love (acquired by The New York Times)** *Director, Games & Virtual Reality.*
Founded and led Fake Love's VR studio, owning tech, product strategy, and talent development. Delivered apps and high-end VFX work - in ad budgets and timelines. **Clients**: *Google, Dell, The Weinstein Company, The New York Times.*

- ▽ **Technical Leadership** - Led engineering on Rendering, Engine, Tools, Sensors, VFX & CI.

- ▽ **Strategic in-house IP** - Delivered first-in-market proprietary $8k$ $360°$ Camera system at film quality - and delivered ads with them on time.

- ▽ **Value for acquisition** - Engine & XR capability was the value leader in the acquisition by the New York Times, enabling growth from 15 to 50 people.

Major titles:

- ▽ **Google Play Music: Music for Everything You Do [Google]** 360 Ad, Filmed. Youtube VR.

- ▽ **Carol: "Dearest..." [Weinstein Company / NYT]** - 360 Video, CG. NYT VR app.

- ▽ **Forma [Tribeca Film Festival]** - Multiplayer, physical VR installation.

2014 - 2015 **Framestore**, *Engineer, VR & Computer Vision*
Tech Lead in the world's first hybrid VFX & VR studio. **Clients:** *Google, Nike, Epic Games, Universal Pictures, Samsung, Disney, Carfax.*

- ▽ **Strategic IP** Built computer vision algorithms for mobile VR.
- ▽ **VFX Pipeline for Realtime** Graphics work in resource-constrained optimization for real time. Built artist and scripting tools for VFX artists to build for Unity and UE4.
- ▽ **Innovation in VR**. Pioneered methods in: Redirected Walking, HUDs, IMU-Optical Tracker Sensor Fusion, and design guidelines for VR.

Major titles as Engineer:

- ▽ **Merrell Trailscape [Nike]**. First-in-market roomscale VR installation. Sundance Film Festival, 2015. **Awards:** *Webby, Clio (Sports), ADC, Hatch (Innovation).*
- ▽ **Parachute [Framestore Ventures]**, Instagram-like mobile VR app for Samsung Gear VR.
- ▽ **Marvel's Avengers: Tony Stark's Lab [Disney / Samsung]**, VR game, bundled with Samsung's Gear VR headset.

Fall 2013 **Microsoft Research, FUSE Labs**, *HCI Research Intern.*
Built an automated home assistant embedded device, focused on the dweller's wellbeing.

Summer 2013 **Midnight Commercial**, *Engineering Intern*
Built software artist tools for laser projectors, and constructive solid geometry software.

2010 - 2012 **Channel 10** [Tel Aviv,Israel], *Director, TV Presenter.*
Member of anchor staff in Israel's highest rated TV news magazine "Hatzinor".

2006 - 2010 **Channel 10** [Tel Aviv, Israel], *Director, Editor.*
Promos, longform documentary and news in Israel's largest national TV news station.

2007 - 2013 **Freelance** *VFX Artist.* Compositor and FX animation for Film & TV.

Research

Selected Publications

2019 Structured Domain Randomization: Bridging the Reality Gap by Context-Aware Synthetic Data. **[ICRA 2019]**

2018 Towards Infinite Virtual Reality Redirected Walking. **[ACM TOG 2018, SIGGRAPH 2018]**

2018 Fluidic Elastomer Actuators for Haptic Interactions in Virtual Reality. **[IEEE Robotics and Automation Letters 2018]**

2018 A Variable Shape and Variable Stiffness Controller for Haptic Virtual Interactions. **[IEEE RoboSoft 2018]**

2017 Stretchable Transducers for Kinesthetic Interactions in Virtual Reality. **[SIGGRAPH 2017]**

Patents

2021 Saccadic Redirection for Virtual Reality Locomotion **[USPTO # 10,922,876]**

2020 Path Planning for Virtual Reality Locomotion **[USPTO # 10,573,061]**

Education

Spring 2014 **Massachusetts Institute of Technology**, Media Lab, *Visiting Student,* Tangible Media Group.

2012 - 2014 **M.PS, New York University,** Interactive Telecommunicaitons Program, *Tisch Scholarship.* HCI and Graphics Research at the NYU Courant Media Research Lab. Supervisor: Prof. Ken Perlin.

2008 - 2012 **B.Sc, Tel Aviv University,** Mathematics & Linguistics, *Summa Cum Laude.*