Eyal Ofek

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SUMMARY

- Research experience in human-computer interaction, ubiquitous computing, Mixed Reality, Haptics, Computer Graphics, and Computer Vision.
- Strong publication record with 20 journal articles (e.g., Nature Communications, Science Robotics, Trans. On Graphics (SIGGRAPH) and communications of the ACM), 72 conference papers (12 of them won awards), and 120 granted patents.
- Senior Member of the ACM. Paper chair of SIGSPATIAL 2011, a PC member of leading conferences of HCI and Vision.
- Industrial and applied research experience. Founded and managed several research groups, generating state-of-the-art research that has impact products, such as the development of the depth sensor used by Microsoft HoloLens, the automatic layout engine for Augmented Reality used by Unity Mars, the World's first streetside imagery service (Bing Maps), a seminal text detection technology used by Bing and included in the popular OpenCV library and more.
- Development of popular open-source toolkits for projection mapping, low vision tools for Virtual Reality, Microsoft Rocketbox avatars, and remote experimentation platform for Mixed Reality.
- Supervised and mentored of more than 45 Ph.D. students during their internship at Microsoft Research, from ideation of research subjects to publications. Teaching a mandatory undergrad course in Computer Graphics at Reichman University.

EDUCATION

The Hebrew University of Jerusalem, Jerusalem, Israel.

Ph.D. Computer Science May 2000.

The Hebrew University of Jerusalem, Jerusalem, Israel.
M.S. in Computer Science (Computer Vision), May 1992.

The Hebrew University of Jerusalem, Jerusalem, Israel, Talpiot Program

B.A. in Computer Science, Physics and Mathematics, May 1988.

RESEARCH INTERESTS

Mixed Reality, Human-Computer Interaction, Haptics, computer vision

PUBLICATIONS

Peer-Reviewed Journal Articles

[j.20] A. Maselli, E. Ofek, B. Cohn, K. Henkley, and M. Gonzalez-Franco, "Enhanced efficiency in visually guided online motor control for actions redirected towards the body midline", Philosophical Transactions of the Royal Society B Vol. 378 Issue 1869. DOI: 10.1098/rstb.2021.0453

[j.19] V. Biener, T. Gesslein, D. Schneider, F. Kawala, A. Otte, P.O. Kristensson, M. Pahud, **E. Ofek**, C. Campos, M. Kljun, K. Copic Pucihar, J. Grubert: "PoVRPoint: Authoring Presentations in Mobile Virtual Reality". IEEE Trans. Visual Computing and Graphics 28(5): 2069-2079 (2022)

[j.18] V. Biener, S. Kalamkar, N. Nouri, **E. Ofek**, M. Pahud, J.J. Dudley, Ji. Hu, P.O. Kristensson, M. Weerasinghe, K.C. Pucihar, M. Kljun, S. Streuber, J. Grubert: "Quantifying the Effects of Working in VR for One Week". IEEE Trans. Visual Computing and Graphics 28(11): 3810-3820 (2022)

[j.17] M. Yamagami, S. Junuzovic, M. González-Franco, **E. Ofek**, E. Cutrell, J.R. Porter, A.D. Wilson, M.E. Mott: "Two-In-One: A Design Space for Mapping Unimanual Input into Bimanual Interactions in VR for Users with Limited Movement". ACM Trans. Access. Computing. 15(3): 23:1-23:25 (2022)

[j.16] K. Ahuja, **E. Ofek**, M. González-Franco, C. Holz, A.D. Wilson: "CoolMoves: User Motion Accentuation in Virtual Reality". Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 5(2): 52:1-52:23 (2021)

[j.15] A. Steed, **E. Ofek**, M Sinclair, M. Gonzalez-Franco: A mechatronic shape display based on auxetic materials, NATURE Communications 12 (1), 4758 (2021)

[j.14] M. Gonazles-Franco, **E. Ofek**, Y. Pan, A. Antley, A. Steed, B. Spanlang, A. Maselli, D. Banakou, N. Pelechano, S. Orts-Escolano, V. Orvalho, L.C. Trutoiu, M. Wojcik, M. V. Sanchez-Vives, J. N. Bailenson, M. Slater, Jaron Lanier: "The Rocketbox Library and the Utility of Freely Available Rigged Avatars". Frontiers of Virtual Reality 1: 561558 (2020)

[j.13] M. González-Franco, A. Steed, S. Hoogendyk, **E. Ofek**: "Using Facial Animation to Increase the Enfacement Illusion and Avatar Self-Identification". IEEE Trans. Visual Computing and Graph. 26(5): 2023-2029 (2020)

[j.12] V. Biener, D. Schneider, T. Gesslein, A. Otte, B. Kuth, P.O. Kristensson, **E. Ofek**, M. Pahud, J. Grubert: "Breaking the Screen: Interaction Across Touchscreen Boundaries in Virtual Reality for Mobile Knowledge Workers". IEEE Trans. Visual Computing and Graphics 26(12): 3490-3502 (2020)

[j.11] D. Schneider, A. Otte, T. Gesslein, P. Gagel, B. Kuth, M. S. Damlakhi, O. Dietz, **E. Ofek**, M. Pahud, P. O. Kristensson, J. Müller, J. Grubert: "ReconViguRation: Reconfiguring Physical Keyboards in Virtual Reality". IEEE Transactions on Visual Computing and Graphics 25(11): 3190-3201 (2019)

[j.10] M. González-Franco, **E. Ofek**, K. Hinckley: "The uncanny valley of haptics"**.** SCIENCE Robotics 3(17) (2018)

[j.9] J. Grubert, **E. Ofek**, M. Pahud, P.O. Kristensson: "The Office of the Future: Virtual, Portable, and Global". IEEE Computer Graphics and Applications 38(6): 125-133 (2018)

[j.8] Brett R. Jones, H. Benko, **E. Ofek**, A.D. Wilson: **"**IllumiRoom: immersive experiences beyond the TV screen". Communication of the ACM 58(6): 93-100 (2015)

[j.7] R. Gal, Y. Wexler, **E. Ofek**, H. Hoppe, D. Cohen-Or: "Seamless Montage for Texturing Models." Computer Graphics Forum 29(2): 479-486 (2010)

[j.6] H. Wang, Y. Wexler, **E. Ofek**, H. Hoppe: "Factoring repeated content within and among images". ACM Trans. Graphics (SIGGRAPH '08) 27(3): 14 (2008)

[j.5] J. Xiao, T. Fang, P. Tan, P. Zhao, **E. Ofek**, L.Quan: "Image-based façade modeling." SIGGRAPH Asia '08 ACM Transactions on Graphics 27(5): 161 (2008)

[j.4] Y. Matsushita, **E. Ofek**, W. Ge, X. Tang, H.-Y. Shum: "Full-Frame Video Stabilization with Motion Inpainting." IEEE Trans. Pattern Analysis and Machine Intelligence 28(7): 1150-1163 (2006)

[j.3] Y. Wei, **E. Ofek**, L. Quan, H.-Y. Shum: "Modeling hair from multiple views". ACM Trans. on Graphics (SIGGRAPH '05) 24(3): 816-820 (2005)

[j.2] **E. Ofek**, A. Rappoport: "Interactive Reflections on Curved Objects." SIGGRAPH '98: 333-342 (1998)

[j.1] **E. Ofek**, E. Shilat, A. Rappoport, M. Werman: "Multiresolution Textures from Image Sequences." IEEE Computer Graphics and Applications 17(2): 18-29 (1997)

Peer-Reviewed Conference Articles

[c.72] P. Panda, M.J. Nicholas, D. Nguyen, E. Ofek, M. Pahud, S. Rintel, M. Gonzalez-Franco, K. Hinckley, and J. Lanier. "Beyond Audio: Toward a Design Space of Headphones as a Site for Interaction and Sensing." DIS 2023

BEST PAPER award.

[c.71] R. Li (UW), T. Seyed, N. Marquardt, E. Ofek. S. Hodges, M. Sinclair, H. Romat, M. Pahud, J. Sharma, W.A.S. Buxton, K. Hinckley, and N. Riche, "*AdHocProx: Sensing Mobile, Ad-Hoc Collaborative Device Formations using Dual Ultra-Wideband Radios,"* CHI 2023

[c.70] Y. Tao (Stanford), C.Y. Wang (Cornell), A.D. Wilson, **E. Ofek**, and M. Gonzalez-Franco, "*Embodying Physics-Aware Avatars in Virtual Reality*," CHI 2023,

BEST PAPER: Honorable Mention award

[c.69] V. Ranganeni, M. Sinclair, **E. Ofek**, A. Miller, J. Campbell, A. Kolobov, E. Cutrell: Exploring Levels of Control for a Navigation Assistant for Blind Travelers. Human-Robot Interaction (HRI '23)

[c.68] P. Panda, M.J. Nicholas, M. González-Franco, K. Inkpen, **E. Ofek**, R. Cutler, K. Hinckley, J. Lanier: "AllTogether: Effect of Avatars in Mixed-Modality Conferencing Environments.**"** CHIWORK 2022: 8:1-8:10

[c.67] J. Lee, R. Natarrajan, S. S. Rodriguez, P. Panda, E. Ofek: "RemoteLab: A VR Remote Study Toolkit." UIST 2022: 51:1-51:9

[c.66] M. Volonte, **E. Ofek**, K. Jakubzak, S. Bruner, M. González-Franco: "HeadBox: A Facial Blendshape Animation Toolkit for the Microsoft Rocketbox Library." VR Workshops 2022: 39-42

[c.65] D. Jain, S. Junuzovic, **E. Ofek**, M. Sinclair, J.R. Porter, C. Yoon, S. Machanavajhala, M. Ringel Morris: "A Taxonomy of Sounds in Virtual Reality". Conference on Designing Interactive Systems 2021: 160-170.

BEST PAPER award

[c.64] D. Jain, S. Junuzovic, **E. Ofek**, M. Sinclair, J.R. Porter, C.s Yoon, S. Machanavajhala, M. Ringel Morris: "Towards Sound Accessibility in Virtual Reality." ICMI 2021: 80-91

[c.63] D. Schneider, V. Biener, A. Otte, T. Gesslein, P. Gagel, C. Campos, K.C. Pucihar, M. Kljun, **E. Ofek**, M. Pahud, P.O. Kristensson, J. Grubert: "Accuracy Evaluation of Touch Tasks in Commodity Virtual and Augmented Reality Head-Mounted Displays." SUI 2021: 7:1-7:11

[c.62] R. Suzuki, **E. Ofek,** M. Sinclair, D. Leithinger, M. González-Franco: "HapticBots: Distributed Encountered-type Haptics for VR with Multiple Shape-changing Mobile Robots." UIST 2021: 131-133

[c.61] E.J. Gonzalez, **E. Ofek**, M. González-Franco, M. Sinclair: X-Rings: A Hand-mounted 360° Shape Display for Grasping in Virtual Reality. UIST 2021: 732-742
BEST PAPER: Honorable Mention award

[c.60] N. Marquardt, N. Henry Riche, C. Holz, H. Romat, M. Pahud, F. Brudy, D. Ledo, C. Park, M.J. Nicholas, T. Seyed, **E. Ofek**, B. Lee, W.A.S. Buxton, K. Hinckley: AirConstellations: In-Air Device Formations for Cross-Device Interaction via Multiple Spatially-Aware Armatures. UIST 2021: 1252-1268

[c.59] R. Suzuki, **E. Ofek**, M. Sinclair, D. Leithinger, M. González-Franco: HapticBots: Distributed Encountered-type Haptics for VR with Multiple Shape-changing Mobile Robots. UIST 2021: 1269-1281

[c.58] F. Siu, M. Sinclair, R.t Kovacs, **E. Ofek**, C. Holz, E. Cutrell: Virtual Reality Without Vision: A Haptic and Auditory White Cane to Navigate Complex Virtual Worlds. CHI 2020: 1-13
BEST PAPER: Honorable Mention award

[c.57] R. Kovacs, **E. Ofek**, M. González-Franco, A. Fay Siu, S. Marwecki, C. Holz, M. Sinclair: Haptic PIVOT: On-Demand Handhelds in VR**.** UIST 2020: 1046-1059

[c.55] T. Gesslein, V. Biener, P. Gagel, D. Schneider, P.O. Kristensson, **E. Ofek**, M. Pahud, J. Grubert: Pen-based Interaction with Spreadsheets in Mobile Virtual Reality**.** ISMAR 2020: 361-373

[c.56] M. González-Franco, B. A. Cohn, **E. Ofek**, D. Burin, A. Maselli: The Self-Avatar Follower Effect in Virtual Reality. VR 2020: 18-25

[c.55] R. Gruen, E. Ofek, A. Steed, R. Gal, M. Sinclair, M. González-Franco:
Measuring System Visual Latency through Cognitive Latency on Video See-Through AR devices. VR 2020: 791-799
BEST PAPER: Honorable Mention award

[c.54] Brian A. Cohn, Antonella Maselli, **E. Ofek** and M. González-Franco:
SnapMove: Movement Projection Mapping in Virtual Reality. AIVR 2020: 74-81

[c.53] M. González-Franco, Z. Egan, M. Peachey, A. Antley, T. Randhavane, P. Panda, Y. Zhang, C. Yao Wang, Derek F. Reilly, Tabitha C. Peck, A. Stevenson Won, A. Steed and **E. Ofek**: MoveBox: Democratizing MoCap for the Microsoft Rocketbox Avatar Library**.** AIVR 2020: 91-98

[c.52] **E. Ofek**, J. Grubert, M. Pahud, M. Phillips, P.O. Kristensson: Towards a Practical Virtual Office for *Mobile Knowledge Workers***.** Symposium on The New Future of Work 2020 (NFW'20)

[c.51] M. González-Franco, M. Sinclair, E. Ofek: Asymmetry of Grasp in Haptic Perception**.** SAP 2020: 3:1-3:5

[c.50] D. Schneider, A. Otte, A.. S. Kublin, A. Martschenko, P.O. Kristensson, **E. Ofek**, M. Pahud, J. Grubert: Accuracy of Commodity Finger Tracking Systems for Virtual Reality Head-Mounted Displays**.** VR Workshops 2020: 805-806

[c.49] J. Hartmann, C. Holz, **E. Ofek**, A. D. Wilson: RealityCheck: Blending Virtual Environments with Situated Physical Reality. CHI 2019: 347

[c.48] J. Lee, M. Sinclair, M. González-Franco, **E. Ofek**, C. Holz: TORC: A Virtual Reality Controller for In-Hand High-Dexterity Finger Interaction. CHI 2019:71

[c.47] Y. Zhao, E. Cutrell, C. Holz, M. Ringel Morris, **E. Ofek**, A. D. Wilson: SeeingVR: A Set of Tools to Make Virtual Reality More Accessible to People with Low Vision. CHI 2019: 111

[c.46] P. Abtahi, M. González-Franco, **E. Ofek**, A. Steed: I'm a Giant: Walking in Large Virtual Environments at High-Speed Gains**.** CHI 2019: 522

[c.45] S. Marwecki, A.D. Wilson, **E**. **Ofek,** M. González-Franco, C. Holz**:** Mise-Unseen: Using Eye Tracking to Hide Virtual Reality Scene Changes in Plain Sight. UIST 2019: 777-789

[c.44] M. Sinclair, **E. Ofek**, Mar González-Franco, C. Holz: CapstanCrunch: A Haptic VR Controller with User-supplied Force Feedback. UIST 2019: 815829.

Best Technical Demo: Honorable mention.

[c.43] J. Yang, C. Holz**, E. Ofek**, A.D. Wilson: DreamWalker: Substituting Real-World Walking Experiences with a Virtual Reality. UIST 2019: 1093-1107

[c.42] L.P. Cheng, **E. Ofek**, C. Holz, A. D. Wilson: VRoamer: Generating On-The-Fly VR Experiences While Walking inside Large, Unknown Real-World Building Environments. VR 2019: 359-366

[c.41] M. E. Mott, E. Cutrell, M. González-Franco, C. Holz, **E. Ofek**, R. Stoakley, M. Ringel Morris: Accessible by Design: An Opportunity for Virtual Reality. ISMAR Adjunct 2019: 451-454

[c.40] I.Choi, **E. Ofek**, H. Benko, M. Sinclair, C. Holz: CLAW: A Multifunctional Handheld Haptic Controller for Grasping, Touching, and Triggering in Virtual Reality. CHI 2018: 654

[c.39] E. Strasnick, C. Holz, **E. Ofek**, M. Sinclair, H. Benko: Haptic Links: Bimanual Haptics for Virtual Reality Using Variable Stiffness Actuation. CHI 2018: 644

[c.38] E. Whitmire, H. Benko, C. Holz, **E. Ofek** andM. Sinclair: Haptic Revolver: Touch, Shear, Texture, and Shape Rendering on a Reconfigurable Virtual Reality Controller. CHI 2018: 86

BEST PAPER: Honorable Mention

[c.37] C. Holz and **E. Ofek**: Doubling the Signal Quality of Smartphone Camera Pulse Oximetry Using the Display Screen as a Controllable Selective Light Source. EMBC 2018: 1-4

[c.36] J. Grubert, Lukas Witzani, **E. Ofek**, M. Pahud, Matthias Kranz, P.O. Kristensson: Effects of Hand Representations for Typing in Virtual Reality. VR 2018: 151-158

[c.35] J. Grubert, Lukas Witzani, **E. Ofek**, M. Pahud, Matthias Kranz, P.O. Kristensson: Text Entry in Immersive Head-Mounted Display-Based Virtual Reality Using Standard Keyboards. VR 2018: 159-166

[c.34] L.-P. Cheng, E. Ofek, C. Holz, H. Benko, A.D. Wilson**:** Sparse Haptic Proxy: Touch Feedback in Virtual Environments Using a General Passive Prop. CHI 2017: 3718-3728

[c.33] B. Nuernberger, **E. Ofek**, H. Benko, A.D. Wilson: SnapToReality: Aligning Augmented Reality to the Real World. CHI 2016: 1233-1244

[c.32] M. Azmandian, M. Hancock, H. Benko, **E. Ofek**, A.D. Wilson: Haptic Retargeting: Dynamic Repurposing of Passive Haptics for Enhanced Virtual Reality Experiences**.** CHI 2016: 1968-1979

[c.31] T. Pasja, H. Benko, **E. Ofek**, A.D. Wilson: Room2Room: Enabling Life-Size Telepresence in a Projected Augmented Reality Environment. CSCW 2016: 1714-1723

BEST PAPER award

[c.30] J. Grubert, **E. Ofek**, M. Pahud, Matthias Kranz, Dieter Schmalstieg: GlassHands: Interaction Around Unmodified Mobile Devices Using Sunglasses. ISS 2016: 215-224

[c.29] H. Benko, C. Holz, M. Sinclair, **E. Ofek**: NormalTouch and TextureTouch: High-fidelity 3D Haptic Shape Rendering on Handheld Virtual Reality Controllers**.** UIST 2016: 717-728

BEST PAPER: Honorable Mention

[c.28] T.T. Nguyen, D.T. Nguyen, S.T. Iqbal, **E. Ofek**: The Known Stranger: Supporting Conversations between Strangers with Personalized Topic Suggestions. CHI 2015: 555-564

[c.27] S. Korman, **E. Ofek**, S. Avidan: Peeking Template Matching for Depth Extension. ICCV 2015: 2174-2182

[c.26] J. Vilk, D. Molnar, B. Livshits, **E. Ofek**, C.J. Rossbach, A. Moshchuk, H.J. Wang, R. Gal: SurroundWeb: Mitigating Privacy Concerns in a 3D Web Browser. IEEE Symposium on Security and Privacy 2015: 431-446

[c.25] B. Ens, **E. Ofek**, N.D. B. Bruce, P. Irani: Spatial Constancy of Surface-Embedded Layouts across Multiple Environments. SUI 2015: 65-68

[c.24] H. Benko, **E. Ofek**, F. Zheng, A.D. Wilson: FoveAR: Combining an Optically See-Through Near-Eye Display with Projector-Based Spatial Augmented Reality. UIST 2015: 129-135 2014

[c.23] R. Gal, L. Shapira, **E. Ofek**, P. Kohli: FLARE: Fast layout for augmented reality applications. ISMAR 2014: 207-212

[c.22] B.R. Jones, R. Sodhi, M. Murdock, R. Mehra, H. Benko, A. Wilson, **E. Ofek**, B. MacIntyre, N. Raghuvanshi, L. Shapira: RoomAlive: magical experiences enabled by scalable, adaptive projector-camera units**.** UIST 2014: 637-644

[c.21] B.R. Jones, H. Benko, **E. Ofek**, A.D. Wilson: IllumiRoom: peripheral projected illusions for interactive experiences. CHI 2013: 869-878

BEST PAPER award

[c.20] **E. Ofek**, S.T. Iqbal, K. Strauss: Reducing disruption from subtle information delivery during a conversation: mode and bandwidth investigation**.** CHI 2013: 3111-3120

[c.19] L. D'Antoni, A.M. Dunn, Suman Jana, T. Kohno, B. Livshits, D. Molnar, A. Moshchuk, **E. Ofek**, F. Roesner, T. S. Saponas, M. Veanes, H.J. Wang: Operating System Support for Augmented Reality Applications. HotOS 2013

[c.18] Y. Eshet, S. Korman, **E. Ofek**, S. Avidan: DCSH - Matching Patches in RGBD Images**.** ICCV 2013: 89-96

[c.17] S. Jana, D. Molnar, A. Moshchuk, A.M. Dunn, B. Livshits, H.J. Wang, **E. Ofek**: Enabling Fine-Grained Permissions for Augmented Reality Applications with Recognizers. USENIX Security Symposium 2013: 415-430 2012

[c.16] C. S. Jensen, **E. Ofek**, E. Tanin: Highlights from ACM SIGSPATIAL GIS 2011: the 19th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems**:** (Nov. 2011). SIGSPATIAL Special 4(1): 2-4 (2012)

[c.15] M. Kamali, **E. Ofek**, F.N. Iandola, I.Omer, J.C. Hart: Linear Clutter Removal from Urban Panoramas**.** ISVC (2) 2011: 85-94

[c.14] B. Epshtein, **E. Ofek**, Y. Wexler: Detecting text in natural scenes with stroke width transform**.** CVPR 2010: 2963-2970

[c.13] M. Kroepfl, Y. Wexler, **E. Ofek**: Efficiently locating photographs in many panoramas. ACM GIS 2010: 119-128

[c.12] B. Zhang, Q. Li, Hongyang Chao, B. Chen, E. **Ofek**, Y.-Q. Xu: Annotating and navigating tourist videos. GIS 2010: 260-269

[c.11] N. Villar, S. Izadi, D. Rosenfeld, H. Benko, J. Helmes, J. Westhues, S. Hodges, **E. Ofek**, A. Butler, X. Cao, B. Chen: Mouse 2.0: multi-touch meets the mouse. UIST 2009: 33-42

BEST PAPER award

[c.10] B. Chen, B. Neubert, **E. Ofek**, O. Deussen, M.F. Cohen: Integrated videos and maps for driving directions. UIST 2009: 223-232

[c.9] T. Yamaguchi, B. Wilburn, **E. Ofek**: Video-Based Modeling of Dynamic Hair. PSIVT 2009: 585-596

[c.8] P. Mishra, **E. Ofek**, G. Kimchi: Validation of vector data using oblique images**.** GIS 2008: 23

[c.7] B. Epshtein, **E. Ofek**, Y. Wexler, P. Zhang: Hierarchical photo organization using geo-relevance**.** GIS 2007: 18

[c.6] H. Jiang, **E. Ofek**, N. Moraveji, Y. Shi: Direct pointer: direct manipulation for large-display interaction using handheld cameras. CHI 2006: 1107-1110

[c.5] N. Li, N. Moraveji, H. Kimura, **E. Ofek**: Improving the experience of controlling avatars in camera-based games using physical input. ACM Multimedia 2006: 73-76

[c.4] X. Cao, **E. Ofek**, D. Vronay: Evaluation of alternative presentation control techniques. CHI 2005

[c.3] Y. Matsushita, **E. Ofek**, X. Tang, H.-Y. Shum: Full-Frame Video Stabilization**.** CVPR (1) 2005: 50-57

[c.2] B. Chen, **E. Ofek**, H.-Y. Shum, M. Levoy: Interactive deformation of light fields. SI3D 2005: 139-146

[c.1] Redert, M. Op de Beeck, C. Fehn, W. A. IJsselsteijn, M. Pollefeys, L. Van Gool, **E. Ofek**, I. Sexton, P. Surman: ATTEST: Advanced Three-dimensional Television System Technologies. 3DPVT 2002: 313-319

Books and Book Chapters

[b.3] V. Biener, **E. Ofek**, M. Pahud, P.O. Kristensson, J. Grubert: Extended Reality for Knowledge Work in Everyday Environments. Everyday Virtual and Augmented Reality 2023: 21-56, Human-Computer Interaction Series, Springer 2023, ISBN 978-3-031-05804-2

[b.2] B. Ens, **E. Ofek**, N. Bruce, and P. Irani. Shared Façades: Surface-embedded layout management for ad-hoc collaboration using head-worn displays. Collaboration Meets Interactive Surfaces and Spaces (CMISS) – Theory and Practice**.** C. Anslow, P. Campos, J. Jorge, (Eds). Springer, 2016

[b.1] I. F. Cruz, D. Agrawal, C.S. Jensen, **E. Ofek**, E. Tanin: Proceedings of the 19th ACM SIGSPATIAL International Symposium on Advances in Geographic Information Systems**,** ACM-GIS 2011, November 1-4, 2011, Chicago, IL, USA, Proceedings. ACM 2011, ISBN 978-1-4503-1031-4

Workshops

[w.4] J. Grubert, **E. Ofek**, M. Pahud, Per-Ola Kristensson, "Back to the Future: Revisiting Mouse and Keyboard Interaction for HMD-based Immersive Analytics**",** CHI2020 workshop *Immersive Analytics: Envisioning Future Productivity for Immersive Analytics (IA2020), Mar 2020.*

[w.3] M. Mott, E. Cutrell, M. Gonzalez Franco, C. Holz, **E. Ofek** and M. Ringel Morris, "Accessible by Design: An Opportunity for Virtual Reality", ISMAR 2019 Workshop on Mixed Reality and Accessibility | Oct 2019

[w.2] M. Pahud, **E. Ofek**, N. H. Riche, M. C. Hurter and J. Grubert, "Mobiles as Portals for Interaction with Virtual Data Visualizations". Data Visualization on Mobile Devices Workshop 2018

[w.1] C. Hurter, N. H. Riche, M. Pahud, **E. Ofek**, S. Drucker, B. Lee, D. Brown and C. Wong, "Into the mixed reality data sphere: mapping user's movements to data exploration tools" #Immersive2017 at IEEE VIS, Oct. 2017, Phoenix.

Posters and Extended Abstracts of Demonstrations

[D.13] M. Sinclair, **E. Ofek**, M. Gonzalez-Franco, C. Holz**.** "Demonstration of CapstanCrunch: A Haptic VR Controller with User-supplied Force Feedback", UIST 2019

Best Demo: Honorable Mention

[D.12] J. Lee, M. Sinclair, M. Gonzalez-Franco, **E. Ofek,** and C. Holz**.** "Demonstration of TORC: A Virtual Reality Controller for In-Hand High-Dexterity Finger Interaction", UIST 2019: DOI: 10.1145/3332167.3356898

[D.11] Kevin Huang, **E. Ofek** & R. Gilad-Bachrach, "Measuring Sway with Markerless Depth Camera"**,** MSR-TR-2019-22 | September 2019. Microsoft.

[D.10] Y. Zhao, E. Cutrell, C. Holz, M. Ringel-Morris, **E. Ofek** & A. Wilson**.** "Demonstration of SeeingVR: A Set of Tools to Make Virtual Reality More Accessible to People with Low Vision", CHI, CHI Extended Abstracts 2019 DOI:10.1145/3290607.3313263

[D.9] J. Herskovitz, **E. Ofek**, W.S. Lasecki, A. Fourney, "Opportunities for In-Home Augmented Reality Guidance", Late Breaking – CHI 2019 DOI:10.1145/3290607.3312933

[D.8] E. Whitmire, H. Benko, C. Holz, **E. Ofek**, M. Sinclair, "Demonstration of Haptic Revolver: Touch, Shear, Texture, and Shape Rendering on a Reconfigurable Virtual Reality Controller**"**, CHI Extended Abstracts 2018. DOI: 10.1145/3170427.3186515

[D.7] E. Whitmire, H. Benko, C. Holz, **E. Ofek**, M. Sinclair, "Demonstration of Haptic Revolver: Touch, Shear, Texture, and Shape Rendering on a Reconfigurable Virtual Reality Controller**"**, *IEEE VR*, 2018

[D.6] I. Choi, **E. Ofek**, H. Benko, M. Sinclair, and C.Holz, "Demonstration of CLAW: A Multifunctional Handheld Haptic Controller for Grasping, Touching, and Triggering in Virtual Reality"**,** *CHI Extended abstracts 2018.* DOI: 0.1145/3170427.3186505

[D.5] I. Choi, **E. Ofek**, H. Benko, M. Sinclair, and C.Holz, "Demonstration of CLAW: A Multifunctional Handheld Haptic Controller for Grasping, Touching, and Triggering in Virtual Reality"**,** *IEEE VR 2018.*

[D.4] E. Strasnick, C. Holz, **E. Ofek,** M. Sinclair, H. Benko, "Demonstration of Haptic Links: Bimanual Haptics for Virtual Reality Using Variable Stiffness Actuation"**,** CHI Extended Abstracts 2018. DOI: 10.1145/3170427.3186541

[D.3] E. Strasnick, C. Holz, **E. Ofek,** M. Sinclair, H. Benko, "Demonstration of Haptic Links: Bimanual Haptics for Virtual Reality Using Variable Stiffness Actuation"**,** *IEEE VR*

[D.2] M. Azmandian, M. Hancock, H. Benko, **E. Ofek**, A.D. Wilson: "A Demonstration of Haptic Retargeting: Dynamic Repurposing of Passive Haptics for Enhanced Virtual Reality Experience". CHI EA '16: Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems, May 2016, pp 3647–3650, DOI:10.1145/2851581.2890265

[D.1] M. Azmandian, M. Hancock, H. Benko, **E. Ofek**, A.D. Wilson: "A Demonstration of Haptic Retargeting: Dynamic Repurposing of Passive Haptics for Enhanced Virtual Reality Experience". ISS '16: Proceedings of the 2016 ACM International Conference on Interactive Surfaces and Spaces November 2016, Pages 501–504, DOI:10.1145/2992154.2996883

Granted Patents

[P.120] Haptic controller, Issued Jan 18, US 11226685, 2022

[P.119] Three-dimensional object tracking to augment display area, Issued Nov 30, US 11,188,143, 2021

[P.118] Displacement oriented interaction in computer-mediated reality, Issued Sep 14, US, 11,119,581, 2021

[P.117] Second-person avatars, Issued Aug 10, US 11,087,518, 2021

[P.116] Haptic Rendering, Issued Aug 10, US 11086398, 2021

[P.115] Hover-based user-interactions with virtual objects within immersive environments, Issued Jul 20, US 11,068,111, 2021

[P.114] Real time styling of motion for virtual environments. Issued Jul 6, US 11055891, 2021

[P.113] Integrated mixed-input system. Issued Jul 6, US 11054894, 2021

[P.112] Annotation using a multi-device mixed interactivity system, Issued Jun 1th, US 11,023,109, 2021

[P.111] Blending virtual environments with situated physical reality. Issued May 11, US 11004269, 2021

[P.110] Deployable controller. Issued May 11, US 11003247, 2021

[P.109] Using eye tracking to hide virtual reality scene changes in plain sight, Issued Apr. 13, US 10,976,816, 2021

[P.108] Selection using a multi-device mixed interactivity system. Issued: January 19, US 10895966, 2021

[P.107] Reality-guided roaming in virtual reality. Issued January 5, US 10885710, 2021

[P.106] Sensor device Issued Dec 29, US 10874035, 2020

[P.105] Virtual reality controller Issued Nov 17, US 10,838,486, 2020

[P.104] Resistance-based haptic device – Issued Sep 15, US 10,775,891, 2020

[P.103] Virtually representing spaces and objects while maintaining physical properties – Issued Jun 30, US 10,699,491, 2020

[P.102] Displacement Oriented Interaction in Computer-Mediated Reality – Issued Apr. 4th, US 10620710, 2020

[P.101] Controller with haptic feedback – Issued Apr 4th, US 10617942, 2020

[P.100] Hover-based user-interactions with virtual objects within immersive environments – Issued Dec 24, US 10514801, 2019

[P.99] Syndication of direct and indirect interactions in a computer-mediated reality environment – Issued Sep 17, US 10417827, 2019

[P.98] Physical haptic feedback system with spatial warping. Issued Sep 17, US 10416769, 2019

[P.97] Virtually representing spaces and objects while maintaining physical properties**.** – Issued May 28, US 10304251, 2019

[P.96] Virtual object manipulation within a physical environment – Issued Aug 6, US 10373381, 2019

[P.95] Application programming interface for multi-touch input detection **–** Issued May 14, US 10289239, 2019

[P.94] Dynamic haptic retargeting – Issued May 14, US 10,290,153, 2019

[P.93] Block view for geographic navigation – Issued Geb 26, US 10,215,585, 2019

[P.92] Projecting a virtual copy of a remote object – Issued Feb 26, US 10216982, 2019

[P.91] Tangible three-dimensional light display **–** Issued Jul 3, US 10013065, 2018

[P.90] Layout design using locally satisfiable proposals **–** Issued May 1, US 9959675, 2018

[P.89] 3D haptics for interactive computer systems **–** Issued Mar 3, US 9916003, 2018

[P.88] Dynamic haptic retargeting **–** Issued Oct 31, US 9805514, 2017

[P.87] Protecting privacy in web-based immersive augmented reality **–** Issued Jun 13, US 9679144, 2017

[P.86] Visualizing video within existing still images – Issued Mar 14, US 9,594,960, 2017

[P.85] Immersive display with peripheral illusions **–** Issued Nov 1, US 9480907, 2016

[P.84] Second-person avatars **–** Issued Sep 9, US 9436276, 2016

[P.83] Transitioning between top-down maps and local navigation of reconstructed 3-D scenes – Issued Aug 23, US 9,424,676, 2016

[P.82] Managing access by applications to perceptual information **–** Issued May 31, US 9355268, 2016

[P.81] Block view for geographic navigation **–** Issued Mar 29, US 9298345, 2016

[P.80] Detecting text using stroke width based text detection – Issued Jan 12, US 9,235,759, 2016

[P.79] Data difference guided image capturing, Issued Nov 10, US 9,183,465, 2015

[P.78] Contour completion for augmenting surface reconstructions – Issued Oct 27, US 9171403, 2015

[P.77] City scene video sharing on digital maps – Issued Oct 20, US 9167290, 2015

[P.76] Scrubbing variable content paths – Issued Sep 29, US 9146119, 2015

[P.75] Interactive geo-positioning of imagery – Issued Sep 1, US 9123159, 2015

[P.74] Map editing with little user input – Issued Aug 18, US 9110921, 2015

[P.73] Cognitive agent – Issued Aug 4, US 9,100,402, 2015

[P.72] Audio presentation of condensed spatial contextual information – Issued May 12, US 9032042, 2015

[P.71] Navigation instructions using low-bandwidth signaling – Issued Apr 14, US 9008859, 2015

[P.70] Removal of Rayleigh scattering from images– Issued Mar 3, US 8970691, 2015

[P.69] Spatial image index and associated updating functionality – Issued Mar 3, US 8971641, 2015

[P.68] Selective spatial audio communication – Issued Feb 17, US 8,958,569, 2015

[P.67] Providing routes through information collection and retrieval – Issued Feb 10, US 8,954,266, 2015

[P.66] Annotating or editing three-dimensional space – Issued Jan 27, US 8,941,641, 2015

[P.65] Detecting text using stroke width-based text detection – Issued Dec 23, US 8917935, 2014

[P.64] Viewing media in the context of street-level images – Issued Sep 9, US 8,831,380, 2014

[P.63] Simulated video with extra viewpoints and enhanced resolution for traffic cameras – Issued Sep 2, US 8823797, 2014

[P.62] Automated fitting of interior maps to general maps– Issued Aug 26, US 8817049, 2014

[P.60] Calibration and annotation of video content – Issued Jul 1, US 8769396, 2014

[P.61] User interfaces for interacting with top-down maps of reconstructed 3-D scenes – Issued Jun 8, US 8773424, 2014

[P.60] Geo-relevance for images – Issued Jul 8, US 8,774,520, 2014

[P.59] Path queries – Issued Apr 8, US 8694383, 2014

[P.58] Image-based localization for addresses – Issued Apr 1, US 8688368, 2014

[P.57] Electromechanical surface of rotational elements for motion compensation of a moving object – Issued Mar 18, US 8675018, 2014

[P.56] Virtual closet for storing and accessing virtual representations of items – Issued Feb 4, US 8645230, 2014

[P.55] Adjustable and progressive mobile device street view – Issued Jan 28, US 8640020, 2014

[P.54] View generation using interpolated values – Issued Jan 21, US 8633942, 2014

[P.53] Transitioning between top-down maps and local navigation of reconstructed 3-D scenes – Issued Jan 7, US 8624902, 2014

[P.50] Spatially registering user photographs – Issued Dec 17, US 8,611,643, 2013

[P.52] Computing transitions between captured driving runs – Issued Nov 12, US 8581900, 2013

[P.50] Shadow detection in a single image – Issued Nov 5, US 8,577,170, 2013

[P.51] Detection of objectionable videos – Issued Nov 1, US 8549627, 2013

[P.50] Filter and surfacing virtual content in virtual worlds – Issued Oct 29, US 8570325, 2013

[P.49] Automatic generation of markers based on social interaction– Issued Oct 15, US 8560515, 2013

[P.48] Geographic data acquisition by user motivation – Issued Oct 8, US 8550909, 2013

[P.47] Visual assessment of landmarks – Issued Oct 1, US 8,548,725, 2013

[P.46] Data difference guided image capturing– Issued Aug 6, US 8503794, 2013

[P.45] Hybrid mobile phone geopositioning – Issued Jul 23, US 8,494,566, 2013

[P.44] Validating user generated three-dimensional models, Issued Jul 16, US 8,487,927, 2013

[P.43] Mobile and server-side computational photography – Issued Jul 16, US 8,488,040, 2013

[P.42] Depersonalizing location traces – Issued Jun 11, US 8463289, 2013

[P.41] Panoramic ring user interface – Issued May 28, US 8453060, 2013

[P.40] Viewing media in the context of street-level images – Issued May 11, US 8447136, 2013

[P.39] Camera-based multi-touch mouse – Issued May 21, US 8446367 , 2013

[P.38] Data driven interpolation using geodesic affinity – Issued May 21, US 8447105, 2013

[P.37] Identifying physical locations of entities – Issued May 14, US 8442716, 2013

[P.36] Tagging video using character recognition and propagation – Issued Apr 30, US 8433136

[P.35] Cognitive agent – Issued Apr 23, US 8,428,908, 2013

[P.35] Techniques for robust color transfer – Issued Dec 25, US 8,340,416, 2012

[P.34] Geo-relevance for images – Dec 4, US 8,326,048, 2012

[P.33] Generating a texture from multiple images – Nov 27, US 8,319,796, 2012

[P.32] Validation and correction of map data using oblique images – Nov 13, US 8,311,287, 2012

[P.31] Annotating images with instructions– Issued Oct 30, US 8301996, 2012

[P.30] Method, medium, and system for ranking dishes at eating establishments – Issued Oct 23, US 8296194, 2012

[P.29] Spatially registering user photographs – Issued Oct 23, US 8295589, 2012

[P.28] Map aggregation – Issued Sep 11, US 8266132, 2012

[P.27] Visualizing camera feeds on a map – Issued Aug 7, US 8237791, 2012

[P.26] Factoring repeated content within and among images– Issued Jun 19, US 8204338, 2012

[P.25] Importance guided image transformation – Issued Jun 12, US 8200037, 2012

[P.24] Cognitive agent– Issued Jun 5, US 8195430, 2012

[P.23] Geocoding by image matching – Issued May 29, US 8189925, 2012

[P.22] Flexible matching with combinational similarity – Issued May 22, US 8,184,911, 2012

[P.21] Generating a texture from multiple images – Issued Feb 28, US 8125493, 2012

[P.20] Dynamic map rendering as a function of a user parameter – Issued Jan 24, US 8103445, 2012

[P.19] Smart navigation for 3D maps – Issued Jan 17, US 8098245, 2012

[P.18] Hybrid maps with embedded street-side images – Issued Dec 27, US 8085990, 2011

[P.17] Visual assessment of landmarks – Issued Nov 15, US 8060302, 2119

[P.16] Semi-automatic plane extrusion for 3D modeling– Issued Nov 15, US 8059888, 2011

[P.15] Augmenting images for panoramic display – Issued Aug 30, US 8009178, 2011

[P.14] Geotagging photographs using annotations– Issued Aug 2, US 7991283, 2011

[P.13] Multi-directional image displaying device– Issued Jun 28, US 7967451, 2011

[P.12] Flexible matching with combinational similarity – Issued Jun 7, US 7957596, 2011

[P.11] Camera based orientation for mobile devices – Issued May 24, US 7946921, 2011

[P.10] Displaying images related to a requested path– Issued May 10, US 7941271, 2011

[P.9] Landmark-based routing – Issued Mar 22, US 7912637, 2011

[P.8] Techniques for decoding images of barcodes– Issued Feb 15, US 7886978, 2011

[P.7] Image completion – Issued Feb 15, US 7889947, 2011

[P.6] Camera and acceleration-based interface for presentations – Issued Dec 14, US 7,852,315, 2010

[P.5] Street-side maps and paths– Issued Nov 23, US 7840032, 20110Modeling and texturing digital surface models in a mapping application– Issued Nov 9, US 7831089, 2010

[P.4] System for guided photography based on image capturing device rendered user recommendations according to embodiments – Issued Sep 28, US 7805066, 2010

[P.3] Mode information displayed in a mapping application – Issued Aug 17, US 7777648, 2010

[P.2] Video enhancement, Issued June 16, US 7,548,659, 2010

[P.1] Remote control of on-screen interactions – Issued Jan 13, US 7477236, 200

INVITED TALKS

[I.21] Invited Talk, Laboratory of Robotics and Engineering Systems (LARSyS) Annual Meeting, (invited by Prof. Nuno J. Nunes) Lisbon, Portugal, July 2023

[I.20] 'TaskVerse', (invited by Prof. Per-Ola Kristensson), Cambridge, UK, July 2023

[I.19] Keynote, Harward AR/VR Symposium, Dec 2022

[I.18] Keynote, RSS '22: Toward Robot Avatars: Perspectives on the ANA Avatar XPRIZE Competition.

[I.17] Invited Talk, Smart Haptics 2021, Dec 2021

[I.16] Interview, Microsoft Research Tech Minutes, Nov 2021

[I.15] Microsoft Research Seminar, Enhancing mobile work and productivity with VR, Dec 2020

[I.14] Invited talk, Behind the scenes with Microsoft: VR in the Wild, Global XR Bootcamp, Nov 2020

[I.13] Invited Talk, Haptics in AR and VR, Frontiers in Virtual Reality editors seminar series, May 2020

[I.12] Interview, The 21st, NPR, Feb 2020

[I.11] Invited Plenary Talk, 15th CSL Student Conference, University of Illinois at Urbana-Champaign, Feb 2020

[I.10] Interview and demo, Microsoft Research Faculty Summit, Jul. 2019

[I.9] Interview, Microsoft Research Podcast, Sep. 2019

[I.8] Interview, BBC News: May 2014

[I.7] Invited Talk, AWE Augmented World Expo June 2013

[I.6] Demo to the Israeli President and Peace Nobel Laureate, Mr. Simon Peres. Dec 2013

[I.5] Interview, Israel TV Channel 10, Nov 2011

[I.4] Keynote, Com.Geo, Washington DC, May 2011

[I.3] Demo, TED 2010 (Presented by Bing Maps & Mobile Architect, Blaise Arcas y Arcas), 2010

[I.2] Invited Talk, ThinkNext, Tel Aviv, Israel, 2010

[I.1] Panelist, "Location, location, location," 6Sight, Monterey, CA 2007

SELECTED MEDIA COVERAGE

[M.39] Oct 2021: **NATURE Device & Materials Blog:** "Building the next generation of Shape Displays."

[M.38] Oct 2020 **Microsoft Research Blog**: Physics matters: Haptic PIVOT, an on-demand controller, simulates physical forces such as momentum and gravity

[M.37] Oct 2020 **Engadget:** "Microsoft explores realistic VR haptics with a wrist-mounted gadget."

[M.36] Oct 2020 **Gizmodo:** "These Wrist-Worn Hammers Swing Into Your Hands, So You Feel Virtual Objects"

[M.35] Aug 2020 **VentureBeat:** "Researchers bring Google Sheets and Microsoft Excel into VR."

[M.34] May 2020 **Microsoft Research – Research Collection**: Tools and Data to Advance the State of the Art

[M.33] Apr. 2020 **Microsoft Research Blog:** Bringing virtual reality to people who are blind with an immersive sensory-based system

[M.32] Mar. 2020 **Microsoft Research Blog:** Release Microsoft Rocketbox Avatars library as open source

[M.31] Feb. 2020 **NPR**, The 21st: Using Virtual Reality To Help People With Disabilities.

[M.30] Jan. 2020 **Scientific American**: "Virtual Reality Has an Accessibility Problem"

[M.29] Oct. 2019 **Microsoft Research Blog:** A new era of spatial computing brings fresh challenges and solutions to VR.

[M.28] Oct 2019 **Daily Mail:** Microsoft reveals its DreamWalker VR rig that lets users explore a virtual world while walking around in real life."

[M.27] Oct 2019 **ZDnet**: "Dream or nightmare? Microsoft's VR swaps your real walking route for a virtual one."

[M.26] Oct 2019 **Gizmodo**: "Microsoft's Over-the-Top VR Rig Lets You Explore a Virtual World While Walking IRL"

[M.25] Oct 2019 **Engadget:** "Microsoft's latest VR experiment is a literal walk in the park."

[M.24] Oct 2019 **Ars Technica:** "Microsoft's DreamWalker VR turns your daily commute into a totally different one."

[M.23] Oct 2019 **RoadToVR:** "Microsoft 'DreamWalker' Experiment Takes First Steps into Always-on World-scale VR"

[M.22] May 2019 **Microsoft Research Blog:** Introducing TORC: A rigid haptic controller that renders elastic objects

[M.21] May 2019 **VentureBeat:** "Microsoft's TORC will let you feel squeezable objects in AR and VR."

[M.20] Apr. 2019 **Microsoft Research Blog:** Advancing accessibility on the web, in virtual reality, and in the classroom

[M.19] Apr. 2019 **Engadget:** "Microsoft is making VR better for those with vision problems."

[M.18] Apr. 2019, **RoadToVR:** "Microsoft Aims to Improve VR for Users with Vision Problems."

[M.17] Mar. 2019 **Microsoft Research Blog:** Giant steps and liberating spaces – Virtual Reality is making cool moves

[M.16] Apr. 2018 **Microsoft Research Blog**: Uncanny Valley and the Sense of Touch

[M.15] Mar. 2018 **Microsoft Research Blog:** Touching the Virtual: How Microsoft Research is Making Virtual Reality Tangible

[M.14] Mar 2018, **Co.Design**: "Crazy Microsoft is the best Microsoft."

[M.13] Mar 2018 **Engadget** "Microsoft's mad scientists are making AR more tactile."

[M.12] Oct 2016 **RoadToVR:** "Microsoft Research Demonstrates VR Controller Prototypes With Unique Haptic Technology"

[M.11] May 2016, **Game Developer:** "Microsoft's new haptic VR tech blurs the lines between realities."

[M.10] Mar 2014, **PCWorld:** "When a monitor just isn't big enough, try Microsoft's SurroundWeb."

[M.9] Mar 2014, **The Telegraph:** "Microsoft Research unveils 3D browser concept."

[M.8] Mar 2014 **Daily Mail:** "Turn your entire room into a SCREEN: Microsoft tool lets you browse the web and beam videos onto the walls of your home."

[M.7] Oct 2014 **Washington Post**: "Why it matters that Microsoft is channeling the Star Trek holodeck"

[M.6] Oct 2014 **CNet:** "Microsoft's RoomAlive turns your room into a Holodeck."

[M.5] Apr 2013 **NBC News**: "The IllumiRoom is Xbox's Proto-Holodeck"

[M.4] Apr 2013 **The Verge**: "Microsoft IllumiRoom is a coffee table projector designed for the next-generation Xbox"

[M.3] Jan 2013 **CES SAMSUNG Keynote** presents Illumirrom

[M.2] Feb 2010 **Flickr Blog:** "Flickr, Flickr, Everywhere "

[M.1] Feb 2010 **Bing Blog:** "TED2010: Spatial Search – Bing, Flickr, Videos, Maps, and the Stars"

VOLUNTEERING AND ACADEMIC SERVICE

Conference Committee member.

ACM SIGSPATIAL 2011 Conference Paper Chair

Program Committee and Associate chair.

VRST 2023 PC Member

ISMAR 2023 PC Member

ACM UIST 2023 PC Member

ACM SIGSPATIAL 2010 PC Member

ACM Conference on Human Factors in Computing Systems (CHI) PC Member (multiple years)

IEEE Computer Vision & Pattern Recognition (CVPR) PC Member (multiple years)

Pacific Graphics PC Member

ACM International Conference on Interactive Surfaces and Spaces (ISS) PC Member

ACM Multimedia Conference (MMSYS) PC Member

Journal member of the Editorial Board

Frontiers in Virtual Reality Specialty Chief Editor – Haptics (2020-2022)

IEEE Computer Graphics & Applications (CG&A) Member of the Editorial Board (2019-2022)

Fellowship area chair

Microsoft Research Ph.D. Fellowship area chair - HCI (2022, 2021, 2022)

Microsoft Research Ada Lovelace Fellowship area chair- HCI (2021)

SCOLARSHIPS, AWARDS AND HONORS

2023	Best Paper, DIS
Apr. 2023	Best Paper: Honorable Mention Paper, CHI
2022	Senior Member of the ACM
2021	Best Paper, DIS
2020	Best Paper: Honorable Mention Paper, CHI
2020	Best Paper: Honorable Mention Paper, IEEE VR
2019	Best Paper: Honorable Mentioned Demo, UIST
2019	Best Paper, ISMAR
2018	Best Paper: Honorable Mentioned Paper, CHI
2016	Golden Mouse Award – Best Video Showcase, CHI
2016	Best paper, CSCW
2013	Golden Mouse Award – Best Video Showcase, CHI

2013	Best paper, CHI
2009	Best paper**,** UIST
2006	Microsoft Star Developer, Microsoft Bing Maps
1992	Charles Clor Scholarship
1984-1987	Talpiot program member

TEACHING EXPERIENCE

2002-2003	**Visiting Professor,** "computer Graphics", a mandatory undergrad course, Reichman University, Herzliya, Israel

RESEARCH EXPERIENCE

PRINCIPAL RESEARCHR, MICROSOFT RESEARCH, USA 2015-2023

Lead research in new areas of Mixed reality (MR), Human-Computer Interaction, Haptics and Vision.

Successes & Achievements:

- Lead Research in productivity in MR, introduced novel techniques for MR telecommuting and collaboration in uncontrol work environments, productivity in immersive spaces, intelligent avatars, and more.
- Lead research in Haptics. Design and development of a line of novel haptic controllers for VR and AR. I worked with product teams as well as progressing the research state-of-the-art.
- I worked with the HoloLens team on scene understanding and defining the adaptive layout of AR to environments.
- RoomAlive Open-source Toolkit - Enables developers to use a network of multiple depth sensors and projectors.
- Microsoft Rocketbox Avatars & Microsoft MoveBox Open-source toolkits – Enable easy use of avatars and motion capture for researchers and developers.
- Room-to-Room – a collaboration system using full-size projection mapping. CSCW16's Best Work award
- SeeingVR Open-source toolkit –Enhance VR for people with low vision.
- RemoteLab Open-Source system – Enables users to conduct remote MR experiments.
- CityLifeSim – An Open-source simulation of pedestrian and vehicle behaviors.
- Granted over 30 patents and published more than 50 papers in leading conferences.
- A senior member of the ACM.
- Frontiers on Virtual Reality – Specialty Editor of Haptics. IEEE CG&A – a member of the editorial board**.**

RESEARCH MANAGER, MICROSOFT RESEARCH, Extreme computing Lab, USA, 2011-2015

Form a new research group and lead research in new areas of Augmented Reality and ubiquitous computing.

Successes & Achievements:

- Forming a research group in a novel area of MR and ubiquitous computing.
- FLARE – A system to automatic fit AR experiences to different environments. Used by the HoloLens and Mesh teams. It was used as a guide for the Unity MARS product and by the HoloLens team. Presented at ISMAR 14
- Illumiroom – a system to augment the environment around a television. It was demonstrated by Microsoft Chief Research & Strategy Officer Craig Mundy at the CES 2014 Keynote. It won the best show at CHI 2014.
- Data-driven completion of 3D models from partial scans (ICCV 2015)
- Research on the effects of AR on communication between people.
- Triton – a system for simulation of 3D audio in a virtual 3D scene. Developed in my group, incorporated in Microsoft Studio's games, and is a part of the Microsoft Project Acoustics.
- Paper chair of ACM SIGSPATIAL International Conference on Advances in GIS. 2011, Chicago, Illinois.
- Granted more than 40 patents and published 13 papers at leading conferences.

PRINCIPAL RESEARCH LEAD & RESEARCH MANAGER, MICROSOFT BING, USA, 2005-2011

I have established and led Virtual Earth Research Group in initiating, prototyping, and introducing new technologies and applications within computer vision and graphics to drive innovation within the Bing maps and mobile service.

I have defined and initiated research direction and strategy to deliver the next product generation with industry-first features. Liaison between research and product group to evaluate market and product needs; define issues and constraints; and guide the research and prototype of solutions that have been subsequently incorporated as major features into the product. Oversee and guide a team of highly capable individuals across multiple disciplines to identify new technology direction for the product. Program committee member for CPRV, Pacific Graphics, ICCV, ACM SIG Spatial.

Successes & Achievements:

- Formed the 1st research group within a dedicated product group for Microsoft; recruited top-notch professionals from leading universities; and led the team in generating many results that have successfully impacted product while generating world-class research in computer vision and graphics.
- Directed research in computer vision and graphics, contributing many new features integration into products that generated rave reviews, 25 patents are granted, 15 publications and presentations at leading forums (TED, SIGGRAPH, CVPR, and more). I won the product team's Achievements Award.
- Managed the development of street-side technology from design to the public. Technology preview generated global recognition and led to the creation of a dedicated development team.
- Developed a novel compression technique for large 3D environment textures. The technology was incorporated into the product and was presented at SIGGRAPH 2008.
- Prototyped a new mode for Bing Maps (continuous Bird Eye), which was a great differentiator of our service.

- Development of a seminal text detector. The technology has been incorporated into Bing mobile, Bing maps pipeline, the popular OpenCV library and has become an industry standard feature in text detection used by over 1800 research works worldwide.
- Development of Bing maps Street-Level images privacy protection.
- Prototyped a service to localize users' photographs and videos within Bing Map's 3D environment. The service was incorporated into the product and presented at TED 2010.
- Invented a new multi-touch mouse product. A combined effort with Microsoft Research and Microsoft hardware led to a new MS product and an award-winning presentation at UIST 2010.

RESEARCHER / PROJECT LEAD • MICROSOFT RESEARCH, Beijing, 2004-2005

I have defined research strategy; created ideas and algorithms; and collaborated with student interns to implement, publish, and present research in vision, graphics, and interaction.

Successes & Achievements:

- Recognized as a Subject Matter Expert (SME) in computer vision and graphics within one year of hire, 7 published papers in leading forums (SIGGRAPH, CVPR, I3D, CHI) and 7 patent submissions during tenure.
- Researched and identified means to stabilize and extrapolate home videos, resulting in 2 patents and technical papers in CVPR 2006 and IEEE PAMI in 2006. Work generated additional ASIC implementation research.
- Modeling avatars' hair structure from images and presented it at SIGGRAPH 2005.
- Led several research initiatives around camera-based interaction with mobile devices, Presented at CHI05 and ACM MM06.

RESAERCH INTERN • SILICON GRAPHICS INC. Research Lab, USA 1992

First intern from Israel. I worked under the supervision of Paul Haeberli and I developed an automatic generation of large format panoramas.

PROFESSIONAL EXPERIENCE

CHIEF SOFTWARE OFFICER / SOFTWARE MANAGER • 3DV SYSTEMS LTD., 1996-2001

Built an impressive record of achievements through a series of increasingly responsible positions for this leading developer of real-time depth sensing video cameras.

Originally recruited as Senior Software Engineer to the newly established organization and earned two promotions to final position as Chief Software Officer overseeing all Research and Development efforts to design new products to expand market share. Recruited and led teams in conducting research and development on environment reconstruction, video movement tracking, application of real-time video as live avatars, and keying without chroma keying. Created product displays and represented the company at international conferences.

Successes & Achievements:

- Recruiting and building a team that managed to develop a novel and award-winning depth-sensing camera (ZCam).
- Building the world's first TOF video camera for applications such as Film Production, TV keying, and engineering. The technology was the base Microsoft HoloLens and MagicLeap depth sensors.
- Led a joint development project with an EU consortium and global researchers to develop an end-to-end 3D TV scheme.

CO-FOUNDER / DIRECTOR OF DEVELOPMENT • INTERACTIVE INNOVATIONS, LTD., 1995-1996

Established and managed a company to invent real-time rending techniques to generate photo-realistic effects.

Research, analysis, and design of real-time global illumination effects engine.

Successes & Achievements:

- Technique presented at SIGGRAPH 1996; published in graphics textbooks and a SIGGRAPH 1999 course.

SYSTEMS CONSULTANT • TIDEX LTD, 1995

As Systems Consultant for Tidex, created a panoramic film by merging multiple video sources.

SYSTEMS CONSULTANT / PROGRAMMER • ATL, INC., 1992-1994

As Systems Consultant for ATL, designed mission planning software package.

SYSTEMS ENGINEER • TALPIOT, ISRAEL DEFENSE FORCE, 1986-1991

I was part of a highly selective group of students to undergo an extensive academic education.

Buildup of the Air Force first aerial imagery image-processing pipeline.

CO-FOUNDER / PROGRAMMER • BAZBOSOFT, INC., 1985-1986

Conceptualized, co-founded, and led all efforts to design the 1st graphic editor package for the Amiga PC.

Design, development and launch of Photon Paint™, a graphic editor package with 3D surface rending and animation capabilities.

Successes & Achievements:

- **Software gained global recognition and is a standard tool within the Amiga PC.** Led the subsequent design and release of Photon Paint 2.0. The product reached a market penetration of 33% of the market worldwide.

LANGUAGE SKILLS

HEBREW	Mother tongue
ENGLISH	Fluent

PROFESSIONAL MEMBERSHIPS

ACM (Association for Computing Machinery) – Senior Member

IEEE (Institute of Electrical Engineers)

REFERENCES

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