

Ratko Jagodić

(Ya-go-ditch)

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I am a software engineer and an interaction designer with 15 years of experience creating interactions with hand tracking, eye/face tracking, speech input and various hardware. I love thinking outside the box and coming up with creative and delightful solutions to interaction challenges.

As a team leader and an individual contributor, I created experiences for virtual reality, vehicles, wall-sized displays, PC apps and games. Though I love being hands-on, I am used to wearing many hats where I lead the vision, communicate to stakeholders and nurture a team.

EDUCATION

Ph.D. Computer Science (HCI) - University of Illinois at Chicago (2011)
Thesis: *Collaborative interaction and space organization in large high-resolution display environments*

WORK EXPERIENCE

AR/VR Research and Prototyping – Independent (2020 –)

- Designed and prototyped novel interactions for VR and AR in Unity

Algorithmic Trading Researcher (2018 – 2020)

- Developed a custom platform and UI for analyzing and visualizing large amounts of financial data.
- Used statistics, machine learning and data analysis to rapidly evaluate trading strategies.

Principal Interaction Designer – Mercedes-Benz R&D, North America (2016)

- Led a multi-disciplinary team in research and prototyping of spatial interactions in vehicles.
- Productized work in the 2021 S-Class MBUX and the VISION AVTR Concept car.
- Managed cross-team projects and formed internal and external partnerships.

Senior Interaction Designer – Mercedes-Benz R&D, North America (2014 – 2015)

- Conceptualized and spearheaded the Intelligent Interior direction within Mercedes-Benz.
- Led product design and prototyping for MBUX Interior Assistant, a spatial hand tracking experience.
- Developed a custom hand and object tracking platform for rapid prototyping.
- Developed and presented eye and hand tracking interactions in the F 015 concept car.

User Experience Designer – Intel (RealSense Group) (2011 – 2014)

- Researched the future of human-computer interaction on PCs.
- Prototyped novel experiences using hand-tracking, speech, face, emotion and eye tracking.
- Formalized best-practices and design guidelines for gesture and speech input.
- Led UX design across several internal and external products.

Consulting – NASA Ames Research Center

(2013)

- Built wall-display collaboration environments and tools for NASA domain scientists.

Research Assistant – Electronic Visualization Lab, U of Illinois at Chicago

(2005 – 2011)

- Developed a multi-user, multi-modal interaction framework for high-resolution wall displays.
- Created novel user interfaces, hardware devices and collaboration tools for ultra-high-resolution wall displays and multi-touch tables. My work was in use daily by over a 100 research and industry sites.

Research Intern – Sharp Laboratories of America

(Summer 2008)

- Developed a scalable and distributed UI widget toolkit for high-resolution wall-sized displays.

PROFESSIONAL SKILLS

Technologies: Hand tracking, eye tracking, face tracking, speech recognition, emotion recognition, machine learning, computer vision, networking, virtual reality, augmented reality, shaders

Prototyping: C++, C#, Python, Unity, JavaScript, Java, Processing, openFrameworks, OpenCV, OpenGL, Qt/QML, CSS, HTML, ARCore/AR Foundation

Hardware: VR, AR, depth cameras, Arduino, electronics, projectors, tiled-displays, touch screens

Data Analysis: JupyterLab, NumPy, Pandas, scikit-learn, matplotlib

User Research: Contextual observations, usability studies, interviews, quantitative research

Media: Adobe (Premiere, Photoshop, Lightroom), Figma, Audacity, Blender

PROFESSIONAL ACTIVITIES

Patents:

- US9197848B2 – Video conferencing transitions among a plurality of devices
- US20130229345A1 – Manual Manipulation of Onscreen Objects
- US9456244B2 – Facilitation of concurrent consumption of media content by multiple users using superimposed animation
- GB2539329A – Method for operating a vehicle, in particular a passenger vehicle

Awards:

- AutoSens Awards “Most Innovative In-Cabin Application” (2019) – MBUX Interior Assistant
- Car HMI Europe Awards “Most Innovative HMI Feature” (2019) – MBUX Interior Assistant
- Red Dot Award “Best of the Best” (2015) – Mercedes-Benz F015
- Engadget “Best of CES” (2015) – Mercedes-Benz F015
- The Verge “Best Car of CES” (2015) – Mercedes-Benz F015

Demonstrations:

- Mercedes-Benz F 015 Luxury in Motion, CES 2015. – Natural user interactions in F 015 concept car.
- NASA IT Summit, San Francisco, CA, 2011. – Wall-displays for collaborative scientific data analysis.
- Lucasfilm, San Francisco, CA, 2011. – Collaborative film-making using networked tiled wall displays.
- Supercomputing 2010, New Orleans, LA. – Novel content organization for tiled displays.

- Disney Studios, Burbank, CA, 2010. – Collaborative film-making using networked tiled wall displays.
- Supercomputing 2008, Austin, TX. – TacTile, a 52" LCD-based multi-touch table.
- Supercomputing 2007, Reno, NV. – A high-resolution hybrid table+wall environment.

Talks:

- ThoughtWorks, Barcelona, Feb 2020. – Designing Natural User Interfaces
- Luxury in Motion Driving Event, Alameda, CA, March 2015. – Contextual Gaze+Gesture Interactions
- NASA IT Summit, San Francisco, CA, Aug 2011. – Visualization and High-Speed Networks for Space Exploration and Collaboration
- IBM Almaden Research Center, Jun 2011. – Designing collaborative large display environments
- NASA Ames Research Center, CA, Jun 2011. – Designing collaborative large display environments
- SAGE BoF Supercomputing 2010, New Orleans, LA, Nov 2010. – Designing usable wall-displays
- ON*VECTOR Workshop 2010, UCSD, San Diego, CA, Feb 2010. – Panel member on "CSCW in Ultra High-Resolution Display Environments."

Publications:

- Leigh, J., Johnson, A., Renambot, L., Peterka, T., Jeong, B., Sandin, D., Jagodic, R., et al.
"Scalable resolution display walls."
Proceedings of the IEEE 101.1 (2012).
- Jagodic, R., Renambot, L., Johnson, A., Leigh, J., Deshpande, S.
"Enabling multi-user interaction in large high-resolution distributed environments."
Future Generation Computer Systems 27, no. 7 (2011).
- Jagodic, R.
"Collaborative interaction and display space organization in large high-resolution environments."
PhD Thesis, University of Illinois at Chicago, (2011).
- Chen, Y., Jagodic, R., Johnson, A., Leigh, J. (2011).
"Cross-Cultural Scientific Collaboration Case Studies."
Workshop on The Changing Dynamics of Scientific Collaborations at the 44th Hawaii International Conference on System Sciences (2011).
- Jeong, B., Leigh, J., Johnson, A., Renambot, L., Brown, M., Jagodic, R., Nam, S., Hur, H.,
"Ultrascale collaborative visualization using a display-rich global cyberinfrastructure."
IEEE computer graphics and applications 30, no. 3 (2010).
- Leigh, J., Johnson, A., Renambot, L., DeFanti, T., Brown, M., Jeong, B., Jagodic, R., et al.
"Emerging from the CAVE: Collaboration in ultra-high resolution environments."
In Proceedings of the First International Symposium on Universal Communication, Kyoto, Japan (Vol. 6, No. 14, pp. 2007-06).
- Jeong, B., Renambot, L., Jagodic, R., Singh, R., Aguilera, J., Johnson, A., & Leigh, J.
"High-performance dynamic graphics streaming for scalable adaptive graphics environment."
In SC'06: Proceedings of the 2006 ACM/IEEE conference on Supercomputing. (2006)
- Wang, X., Vishwanath, V., Jeong, B., Jagodic, R., He, E., Renambot, L., et al.
"LambdaBridge: A scalable architecture for future generation terabit applications."
In 2006 3rd International Conference on Broadband Communications, Networks and Systems. IEEE.
- Leigh, J., Renambot, L., Johnson, A., Jeong, B., Jagodic, R., et al.
"The global lambda visualization facility: an international ultra-high-definition wide-area visualization laboratory."
Future Generation Computer Systems, 22(8). (2006)
- Renambot, L., Jeong, B., Jagodic, R., Johnson, A., Leigh, J., et al.
"Collaborative visualization using high-resolution tiled displays."
In ACM CHI Workshop on Information Visualization Interaction Techniques for Collaboration Across Multiple Displays (2006)
- Byungil, J., Renambot, L., Jagodic, R., Singh, R., Aguilera, J., et al.
"High-performance dynamic graphics streaming for scalable adaptive graphics environment."
In Proceedings of Supercomputing 2006 (SC'06), 2006