JINKI JUNG

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GitHub: https://github.com/JinkiJung
citations : http://scholar.google.co.kr/citations?user=inzigzUAAAAJ&hl=en&authuser=1

HIGHLIGHT

Jinki Jung is a senior software developer of Digital Maritime Consultancy, contributing to development of Maritime Connectivity Platform (MCP), one of the biggest open-source based platform in maritime industry, as a system architect and a full-stack developer. Previously he was a researcher and developer of Augmented Reality/Virtual Reality/Human-Computer interaction area addressing interaction and architecture for the use of those in mobile environment. In his free time, he contributes to an open-source project named iil with his interest in modeling different types of work and its automation.

CAREER

Digital Maritime Consultancy (DMC), Denmark
Senior Software Developer, Secretariat of MCP
Full stack developer of MCP components and DevOps of MCP service testbeds **2019-Now**

Korea Research Institute of Ships and Ocean Engineering (KRISO), Republic of Korea
Postdoctoral researcher, Maritime Safety Research Division
Lead researcher of Virtual Reality / Augmented Reality for Safety use (e.g., maritime training) **2016-2019**

Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea
Postdoctoral researcher, Information and Electronics Research Institute
Lead researcher for addressing user-centric interaction (e.g., hand gestures)
and performance optimization in Augmented reality **2015-2016**

DEVELOPMENT EXPERIENCES AT DMC

Jinki has contributed to the development of an open-source project MCP as a member of MCP Consortium such as:

- Contribute to MCP
- Lead the development of MCP management portal, the administrative front-end for MCP components
- Design and implement a decentralized architecture of Maritime Service Registry for global maritime service discoverability
- Conduct an analysis of security vulnerabilities (CWE) of Maritime Identity Registry with tools like Sparrow and SonarLint
- Design Maritime Messaging Service system architecture within MMS WG
- Participate to write a draft of Maritime Messaging Service protocol specification for submission to international organizations for standardization
- Participate an international open-source consortium with organizations from 15 countries for harmonization, standardization and interoperability of maritime services at global scale since 2018
- Deploy up-to-date version of components into the MCP testbed and maintain it
- Use Github Actions for automated deployment (only for front-end parts)

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST)
Ph.D., Computer Science
Research Topic: Mobile Augmented Reality **2009-2015**
Dissertation: “Real-time Sensor Fusion based Mobile Augmented Reality Framework”
Advisor: Hyun S. Yang

Korea Advanced Institute of Science and Technology (KAIST)
M.S., Computer Science 2009
Research Topic: Natural User Interface for Augmented Reality **2007-2009**
Thesis: “A Real-time Robust Body Part Tracking System for Intelligent Environment”
Advisor: Hyun S. Yang

Soongsil University

B.S., Media Engineering 2007 **2003-2007**

PROJECTS

Maritime Connectivity Platform (MCP) - https://maritimeconnectivity.net
System architect / technical advisor / code contributor / WG member (https://github.com/maritimeconnectivity) **2018 – Now**
Contribute to develop the architecture of distributed microservices of MCP core components and implement of the components including Maritime Identity Registry (PKI, digital certificate, OIDC, HSM and MIR specification/installation/documentation), Maritime Service Registry (Distributed ledger / Blockchain, Spring boot application backend and React-based web front-end) and Maritime Messaging Service (high-level description / specification for standardization)

Maritime Resource Registry (MRR) - https://digital-maritime-consultancy.github.io/mrr-portal/
System architect / front-end main contributor (https://github.com/Digital-Maritime-Consultancy/mrr-portal) **2021 – Now**
Contribute to build the architecture of MRR for storing various maritime resources annotated with Maritime Resource Name (IALA R1023) and version and looking up with the information as such. Currently MRR is a prototype to introduce the concept to relevant organizations and stakeholders and will be deployed as an operational service.

VoTT-dot: point-based annotation support for VoTT - https://github.com/Digital-Maritime-Consultancy/VoTT-dot
Lead developer for both front- and back-end parts **2021 – Now**
Update the VoTT annotation tool of Microsoft for supporting point-based annotation and other advanced features, described in detail at the VoTT-dot readme file.

Public open big data: Maritime Object AI Data - https://aihub.or.kr/aidata/34155
Annotation tool & DL developer (https://github.com/Digital-Maritime-Consultancy/VoTT/tree/0.7 **)** **2020 – Dec. 2020**
Develop an annotation tool for Korean national project establishing a maritime object image database and a panoptic segmentation model for validating the database

iil: a work description (work in progress) - https://jinkijung.github.io/iil-docs/
Founder / main contributor **2020 – Now**
Propose and develop iil, a work description model, for managing both personal and collaborative work efficiently.

DEVELOPMENT SKILLS

Programming Language: C, C++, Java, Typescript, Objective C, Python, Javascript
Front-end framework: React, Angular
Back-end framework: Spring boot, Node.js, NestJS
Graphics Engine: Unity3D, UE5, OpenGL, WebGL
Geographic
Mobile Programming: iOS, Android

PUBLICATIONS

International Journals

Discipline vs guidance: comparison of visual engagement approaches in immersive virtual environments
Hyeopwoo Lee, **Jinki Jung**, Heung Kyu Lee, Hyun Seung Yang
Multimedia tools and applications, 2021

Effects of interface on procedural skill transfer in virtual training: Lifeboat launching operation study
Jinki Jung, Young Joong Ahn
Computer Animation and Virtual Worlds, 2018

Efficient mobile AR technology using scalable recognition and tracking based on server-client model
Jinki Jung, Jaewon Ha, Sang-Wook Lee, Francisco A Rojas, Hyun S Yang
Computers & Graphics, 2012

Real-time recognition and tracking for augmented reality books
Kyusung Cho, **Jinki Jung**, Sang-Wook Lee, Sang Ok Lim, Hyun Seung Yang
Computer Animation and Virtual Worlds, 2011

Domestic Journal

A Study on the Implementation of a Web-browser-based Global e-Navigation Service Discovery System for Decentralized Maritime Service Registries
Jinki Jung, Young Joong Ahn
The Journal of Navigation and Port Research, 2022

A Virtual Sailor Training Platform for Fire Drills on Ship
Jinki Jung, Jin Hyung Park
The Journal of Navigation and Port Research, 2016

Real-time Sensor-aided Scene Analysis based on Line Graph for Mobile Augmented Reality
Jinki Jung
The Journal of Korean Institute of Information Technology, 2015

International Conferences

Annotation vs. Virtual Tutor: Comparative Analysis on the Effectiveness of Visual Instructions in Immersive Virtual Reality
Hyeopwoo Lee, Hyejin Kim, Diego Vilela Monteiro, Youngnoh Goh, Daseong Han, Hai-Ning Liang, Hyun Seung Yang, and **Jinki Jung**
18th IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2019)

Ensuring Safety in Augmented Reality from Trade-off Between Immersion and Situation Awareness
Jinki Jung, Hyeopwoo Lee, Jeehye Choi, Abhilasha Nanda, Uwe Grünefeld, Tim Claudius Stratmann, Wilko Heuten
17th IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2018)

Guiding Smombies: Augmenting Peripheral Vision with Low-Cost Glasses to Shift the Attention of Smartphone Users
Uwe Grünefeld, Tim Claudius Stratmann, **Jinki Jung,** Hyeopwoo Lee, Jeehye Choi, Abhilasha Nanda, Wilko Heuten
17th IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2018)

An Adaptive Augmented Reality Interface for Hand based on Probabilistic Approach
Jinki Jung, Hyeopwoo Lee, and Hyun Seung Yang
14th IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2015)

Real-time sensor-fusion based Indoor Localization for Mobile Augmented Reality
Jinki Jung, Hyeopwoo Lee, Luis Weruaga, Jamal Zemerly and Hyun Seung Yang
20th International Conf. on Virtual Systems and Multimedia (VSMM 2014)

Augmented Keyboard: a Virtual Keyboard Interface for Smart glasses
Jinki Jung, Jinwoo Jeon, Hyeopwoo Lee, Kichan Kwon, Jamal Zemerly, Hyun S Yang
ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry (VRCAI 2014)

Smartphone as an augmented reality authoring tool via multi-touch based 3D interaction method
Jinki Jung, Jihye Hong, Sungheon Park, Hyun S Yang
ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry (VRCAI 2012)

Efficient 3D content authoring framework based on mobile AR
Sang-Wook Lee, **Jinki Jung**, Jihye Hong, Suwon Lee, Hyunwoo Cho, Hyun Seung Yang
18th International Conf. on Virtual Systems and Multimedia (VSMM 2012)

AR paint: a fusion system of a paint tool and AR
Suwon Lee, **Jinki Jung**, Jihye Hong, JB Ryu, Hyun S Yang
International Conference on Entertainment Computing (ICEC 2012)

AR postcard: the augmented reality system with a postcard
Hyunwoo Cho, **Jinki Jung**, Kyusung Cho, Yong-Ho Seo, Hyun S Yang
ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry (VRCAI 2011)

Mobile Augmented Reality using scalable recognition and tracking
Jaewon Ha, **Jinki Jung**, ByungOk Han, Kyusung Cho, Hyun Seung Yang
Virtual Reality Conference (VR 2011), IEEE

Online scene modeling for interactive AR applications
Jaesang Yoo, Kyusung Cho, **Jinki Jung**, Hyun S Yang
International Conference on Entertainment Computing (ICEC 2010)

Multiple page recognition and tracking for augmented books
Kyusung Cho, Jaesang Yoo, **Jinki Jung**, Hyun S Yang
International Conference on Entertainment Computing (ICEC 2010)

Real-time robust body part tracking for augmented reality interface
Jinki Jung, Kyusung Cho, Hyun S Yang
ACM SIGGRAPH International Conference on Virtual-Reality Continuum and its Applications in Industry (VRCAI 2009)

Hybrid visual tracking for augmented books

Hyun S Yang, Kyusung Cho, Jaemin Soh, **Jinki Jung**, Junseok Lee
International Conference on Entertainment Computing (ICEC 2009)

PATENTS

A virtual keyboard based on hand recognition and implementing method thereof
Korea Patent, 10-1559424, Co-inventor, 2015

3D interaction method for Augmented Reality using multi-touch interface
Korea Patent, 10-1338958, Co-inventor, 2013

Augmented reality system and method of a printed matter and video
Korea Patent, 10-1197126, Co-inventor, 2012

Efficient 3D object recognition using a tree structure
Korea Patent, 10-1068465, Co-inventor, 2011

3D OBJECT RECOGNITION SYSTEM AND METHOD

US Patent Pending, 12/912,211, Co-inventor, 2010

RESEARCH EXPERIENCES

Virtuality for Safety
Lead researcher **March 2018 – February 2019**
Conducted researches on technology-driven safety ensuring components based on VR/AR

VR-simulated Sailor Training Platform for Emergency
Project manager, Researcher **June 2015 – February 2019**
Developed a sailor training platform for emergency based on VR system that provides natural interaction with virtual ship environment.

KAIST-KUSTAR international joint research of indoor localization and context-aware Augmented Reality
Project manager, Researcher **March 2013 – June 2015**
Designed real-time indoor localization using indoor scene analysis that makes use of line feature and multiple sensors of a mobile device.

Augmented Keyboard: a virtual keyboard interface for smart glasses
Project manager, Researcher **April 2014 – December 2014**
Proposed a novel interaction design and developed a model-based hand palm tracking method for the proposed interface.

Performance optimization of markerless tracking module for mobile devices
Project manager, System engineer **March 2014 – December 2014**
Doubled the tracking performance (FPS) on a mobile device by adapting multi-threaded architecture.

Probabilistic modeling of line-pair appearance for drawing image retrieval
Project manager, Researcher **September 2012 – March 2013**
Proposed a novel histogram based matching method that employs the invariant properties of the pairwise line features.

Real-time 6DOF hand pose estimation for Augmented Reality using RGB camera
Researcher **December 2010 – June 2011**
Developed the appearance based hand pose estimation by modeling spatial structure of skin colored region.

Real-time robust markerless recognition and tracking for Augmented Reality book
Researcher **March 2008 – January 2011**
Developed the robust recognition performance against cluttered background by dividing the screen into multiple areas and separating the corresponding recognition results

Real-time body part tracking and gesture recognition for an intelligent environment
Project manager, Researcher **August 2008 – September 2009**
Proposed the RGB-image based 3D body part tracking method by using Kalman filter.

PhotoGeo: 3D reconstruction of vehicles based on image based rendering modeling (IBMR)
System engineer **March 2007 – November 2007**
Implemented the texturing module and GUI interface of the system.

INVITED TALKS

International Workshop on Intelligent Software Engineering, 6th December 2022
Title: Sharing open source software development experiences

Empathic Computing Laboratory Seminar Series 2023, 28th June 2023
Title: Harder, Better, Clearer, Stronger

LANGUAGES

English – speak fluently and read/write with high proficiency
Korean – native language
Danish – beginner