

## 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

Support each Topic: Massive Ship Traffic Simulation

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:

- Participate an international open-source consortium with organizations from 15 countries for harmonization, standardization and interoperability of maritime services at global scale since 2018
- Perform analysis of open-source license compliance with Apache 2.0 license and change dependencies and database for the compliance
- 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
- Lead the development of MCP management portal, the administrative front-end for MCP components
- 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
- 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)
- Do performance optimization and bug fixes from user's feedback
- Collaborate with a team of developers from around the world through GitHub, communicating through issues and pull requests
- Build documentation site for developers

### EDUCATION

#### Korea Advanced Institute of Science and Technology (KAIST)

Ph.D., Computer Science

Research Topic: Mobile Augmented Reality

Dissertation: "Real-time Sensor Fusion based Mobile Augmented Reality Framework"

Advisor: Hyun S. Yang

2009-2015

#### 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

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*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

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##### 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.

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#### INVITED TALKS

International Workshop on Intelligent Software Engineering 2022

Title: Sharing open source software development experiences

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#### LANGUAGES

English – speak fluently and read/write with high proficiency

Korean – native language

Danish – beginner level

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