JINKI JUNG, PH.D. 정 진 기 (IN KOREAN)

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citations : http://scholar.google.co.kr/citations?user=inzigzUAAAAJ&hl=en&authuser=1

HIGHLIGHT

I am a senior software developer with solid and in-depth experience in software engineering, full-stack development, virtual reality, augmented reality, and information exchange. I am currently working at AIVeNautics as a Technical Director, where I contribute to the development applications with an open-source project called Maritime Connectivity Platform (MCP), a digital framework and standards for secure and interoperable maritime services. Armed with extensive research experience in VR/AR-based training and user-centric interaction at KRISO/KAIST, I am a passionate problem solver with a knack for seamlessly integrating cutting-edge technologies into excellent user experiences.

CAREER

AIVeNautics, Republic of Korea
Technical Director
Lead application development in maritime digitalization **2025-Now**

Digital Maritime Consultancy (DMC) ApS, Denmark
Senior Software Developer, Secretariat of MCP
Full stack developer contributing to Maritime Connectivity Platform (MCP)
and DevOps of MCP service testbeds **2019-2025**

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 based training and its interface **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 HIGHLIGHT

I have contributed to the development of MCP such as:

- Development
  - Proactively contributed to the core components of the Maritime Communication Platform (MCP), including Maritime Identity Registry (MIR), Maritime Service Registry (MSR), and Maritime Messaging Service (MMS)
  - Led the development of the MCP management portal, serving as the administrative front-end for managing MCP components and overseeing their functionality
  - Led the development of the MMS Agent, a Golang-based library that enables seamless integration with the MMS network, and the map-based MMS demo interface, built with React and TypeScript, to showcase the platform's capabilities
- Architecture
  - Conceptualized and implemented a decentralized architecture for the MSR, fostering global maritime service discoverability and interoperability across the maritime ecosystem
  - Played a pivotal role in designing the system architecture for the MMS Working Group (WG), contributing to the development of a draft specification for an international standardization body
- Deployment/Operation
  - Maintained and operated the up-to-date version of MCP components at the MCP testbed, ensuring the continuous availability and reliability of the platform
  - Successfully deployed an MIR instance equipped with a Hardware Security Module (HSM) to safeguard sensitive maritime identity information
  - Adopted Github Actions for automated deployment, streamlining the process and reducing the risk of errors
- Activities
  - Actively participated in the MCP consortium, collaborating with over 15 countries since 2018, to promote harmonization, standardization, and interoperability of maritime services at a global scale

- Contributed as a co-author to the international standard RTCM 13900.0, "Maritime Messaging Service Architecture and Protocol," helping to define specifications for maritime digital communication systems.
- Presented the MMS network at IALA's MCP MMS seminar, showcasing the project's achievements and its potential impact on the maritime industry.

My development work outside the context of MCP includes:

- Experienced in developing annotation tools for public open big data for AI (https://aihub.or.kr/aidata/34155)
  - Proficient in using Microsoft's VoTT to create image-based front-end tools for annotating objects with geometries and super-pixel segments
  - Developed a novel interface for attention (represented as a dot) that significantly improves the efficiency of annotation work
  - Expertise in building native desktop applications using Electron and React
  - Created a robust backend API to handle computationally intensive tasks such as superpixel segmentation, attention-based object detection, and data storage
- MCP Management Portal
  - Developed a management web portal using **Angular** and **Clarity Design System** to administer maritime identities and services in the Maritime Connectivity Platform (MCP) ecosystem
  - Configured **CI/CD pipelines** and automated **GitHub Pages deployment** using Angular CLI, enabling streamlined and consistent releases of the management portal to public demonstrator environments.
- Maritime Resource Registry (MRR) development for maritime resource management
  - Contributed to the conceptualization and design of MRR, ensuring its alignment with the needs of various organizations and stakeholders, including IALA
  - Led the front-end development of MRR, focusing on implementing intuitive search and display functionalities for resources based on their MRNs and versions

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**

PERSONAL PROJECTS

iil: a work description model - https://jinkijung.github.io/iil-docs/
Founder / Main contributor **2020 – Now**
As a founder, I have contributed to the development of a work description model called "iil" and its associated ecosystem. The iil model aims to clearly articulate a sequence of responsibilities (the conditions involved in completing a task) and the relationships between these sequences, which could be either compositional or consequential. I believe that this model ultimately empowers individuals to effectively grasp the process of accomplishing tasks from a holistic perspective to the most granular level. The open-source iil ecosystem I am actively involved in is outlined below:
- iil Documentation: https://github.com/JinkiJung/iil-docs
- iil backend service: https://github.com/JinkiJung/iil-repository
- iil todo list frontend: https://github.com/JinkiJung/iil-todo
- TreeFlow (iil graph viewer): https://github.com/JinkiJung/TreeFlow

Tasc engine for Unity3D - https://github.com/VirtualityForSafety/Tasc-Unity
Main contributor / Researcher / Project leader (https://github.com/VirtualityForSafety) **2017 – 2020**

In collaboration with my colleague Hyeopwoo Lee, I developed a Unity3D engine-based script engine called "Tasc" that converts scripts into executable VR training programs. Three example training

scenarios and programs were provided as open source, which were part of our published work "Annotation vs. virtual tutor: Comparative analysis on the effectiveness of visual instructions in immersive virtual reality."
- project repositiories: https://github.com/VirtualityForSafety

DEVELOPMENT SKILLS

Programming Language: C, C++, Java, Typescript, Objective C, Python, Javascript, Go
Front-end framework: React, Angular, Svelte
Back-end framework: Spring boot, Node.js
ID and access management framework: Keycloak
Event streaming framework: Apache Kafka
Graphics Engine: Unity3D, UE5, OpenGL, WebGL
Database: Postgres, MySQL, SQLite
Mobile Programming: iOS, Android

PUBLICATIONS

To see all my international publications, please refer to my Google Scholar page below:
https://scholar.google.co.kr/citations?user=inzigzUAAAAJ&hl=en

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

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