**Doyoon Jung**

**Portfolio**

**Project (individual)**

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| **1. Address book project (C++)** |
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| \* Date of writing: February 2022  \* Development language: C++  \* About the work:  - The address book program was written using the data structure “Circular Linked List”. |

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| **2. Hospital reservation management program (Java)** |
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| \* Date of writing: February 2022  \* Development language: Java, Swing (GUI programming)  \* Database: Oracle 11g  \* About the work:  - By linking the database, a function was implemented that allows the patient to select and  reserve a hospital treatment by a designated specialist.  - Through today's reservation status, the patient reservation status can be displayed and viewed  in real time on the screen. |

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| **3. Library Management System (C#)** |
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| \* Date of writing: February 2022  \* Development language: Ms Visual C#.NET  \* Database: Oracle 11g  \* About the work:  - As a library management program, an information system was built using the basic functions of CRUD (Create, Read, Update, Delete).  - You can use functions such as reservation date, return, and reservation cancellation. |

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| **4. Java Spring Framework multi-file upload, download, bulletin board, keyword search, paging algorithm, member login implementation, project** |
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| \* Date of writing: February 2022  \* Development language: Java / Spring Framework, MyBatis  \* Database: MySQL (MariaDB)  \* About the work:  - Using MariaDB, a multi-attached bulletin board was implemented, and a web bulletin board capable of keyword search was implemented.  - Implemented paging algorithm so that pages can be divided.  - Member login function has been implemented. |

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| **5. Java Spring Framework / AOP, Interceptor-based member login, member registration implementation and MyBatis transaction project** |
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| \* Date of writing: March 2022  \* Development language: Java / Spring Framework, MyBatis  \* Database: MySQL (MariaDB)  \* About the work:  - Aspect-oriented programming is applied to member login through Spring AOP.  - By linking Spring Framework and MyBatis, transaction processing was applied to the member registration web page. |

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| **6. PHP 8.0 MVC Board Project** |
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| C:\Users\pc\AppData\Local\Microsoft\Windows\INetCache\Content.Word\220313_21.png |
| \* Date of writing: March 2022  \* Development language: PHP 8, Smarty 0.4 framework  \* Database: MySQL (MariaDB)  \* About the work:  - Post password is implemented with SHA256 password by using hash function, and bind\_param is applied to prevent SQL Injection.  - Multi-file upload is implemented as an information unit that can be stored in the database through the stack algorithm.  - By applying the Smarty framework, the screen UI stage and implementation are separated by a tpl file. |

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| **7. IoT vegetable cultivation management system** |
| https://rabbitsun2.github.io/images/project/iot_ct_mgt/220331_1.jpg |
| https://rabbitsun2.github.io/images/project/iot_ct_mgt/220331_4.jpg |
| \* Date of writing: March 2022  \* Development language: Java (Spring Framework 5.2)  \* Database: MySQL (MariaDB)  \* About the work:  - Apply ajax using jQuery and Javascript.  - SHA256 encryption algorithm is applied as a password processing method.  - UUID v4 is used as a unique identifier.  - Functions such as temperature and humidity, heating and cooling, and graph output have been implemented.  - In the implementation of the chatbot, good words and bad words can be distinguished by weight. |

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| **8. PyQt5 – Socket Client & Text Parser Multiple C Server** |
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| **8. PyQt5 – Socket Client & Text Parser Multiple C Server** |
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| \* Date of writing: April 2022  \* Development language: C, Python  \* Database: None  \* About the work:  - Network programming with sockets.  - Using a struct to put a char pointer as its type and value.  - The string value received from the client is separated and assigned to the Datainfo structure.  - Implemented to perform string comparison to see whether the received data value is in the correct form or not. |

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| **9. PyQt5 – Python Messenger** |
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| \* Date of writing: April 2022  \* Development language: Python  \* Database: MariaDB  \* About the work:  - Synchronization was handled using timers and threads.  - Sent and Inbox, replies, and sending messages have been implemented. |

**Project (team)**

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| **10. Smart Premiere (AI Smart Logistics) /  Gwangju Information Culture Industry Promotion Agency – Team Building 3rd Project** |
| Develop a solution that tracks the project status, product status, and logistics warehousing status within the web program.  We will build a smart logistics environment based on IoT based on AI that can control the flow of logistics by using cameras and sensors.  □ Planning intention  ◦ Changes due to consumption patterns such as small quantity orders for multiple products  ‐ The logistics system is becoming a key factor in indicating the competitiveness of a company.  ◦Development of systems that help warehouses through automated warehouse systems  ‐ We want to develop a device that assists parts that are difficult to verify with the naked eye.  ‐ To develop a logistics automation system using image processing, AI, and sensors.  □ Project Introduction  ◦ Developed to enable account management in a web-based integrated environment.  ‐ Design and implementation of “user account by permission” and “user registration” that can access the smart logistics program.  ◦ Web-based design and implementation of process flow management functions for logistics systems.  ‐ One logistics was designed as a project unit from project registration to product registration.  ‐ It is implemented to search for products registered in the DB and perform registration processing through the warehousing process.  ‐ The delivery function was implemented based on the received data.  ◦ Implemented so that multiple attachments can be used when registering a project or product on the web.  ‐ Create a folder in UUIDv4 format and use the time function to allow an outsider to directly trace the path with a random file. Implemented in a non-existent form.  ◦ Object recognition program was designed using OpenCV based on GUI.  ‐ Photo data and object information can be extracted.  ‐ It will be designed to create a training data model through CNN based on photo data.  ◦ Object detection by interworking of MicroController (Arduino) and various sensors (eg pressure, shock, RFID, ultrasonic, etc.) Implement a hardware prototype.  ‐ It is planned to implement real-time event control based on GUI through Wifi communication.  ◦ Object detection hardware by interworking of MicroController (Arduino) and various sensors (eg pressure, shock, RFID, ultrasonic, etc.) Implement a prototype.  ‐ It is planned to implement real-time event control based on GUI through Wifi communication.  □ Differentiation from other contents  ◦ In the case of conveyor belts used in the existing logistics system, it was limited to simple motor  control by electrical signals.  ‐ The hardware was designed to recognize the shape of an object based on IoT.  ◦ We thought about an integrated logistics automation solution that can be linked with existing production or logistics facilities targeting small and medium-sized businesses.  ‐ To propose a classification method through IoT-based sensor or control. |

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| **Composition:** Jung Do-yoon and 3 others  **Team Leader:** Jung Do-yoon (General Manager)  **Development period:** May 2022 ~ November 2022 end  **Development funding support:** Gwangju Information Culture Industry Promotion Agency  (participation in team building project)  **Development environment support:** Korea Polytechnic University Gwangju Campus  **Project URL**: <https://rabbitsun2.github.io/project/smart_premiere/index.html> |

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| **Fig 1)** Full picture – Polytech Capstone Graduation Design Exhibition (taken from 10-25 October 2022)  **Fig 2)** Image processing cradle development process |
| **Fig 3)** Creating an IoT hardware case with Fusion 360 (designed by me) |

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| **Fig 4)** Profile assembly and image processing experimental equipment fabrication    **Fig 5) Robot arm and soldered controller board (developed by myself)**  (It was very difficult to get a robot arm frame due to Corona 19. I got a low-cost 6dof frame) |

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| **Fig 6)** Web-based management screen written in PHP 8 (1) (written by myself)    **Fig 7)** Web-based management screen written in PHP 8 (2) (written by myself) |

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| **Fig 8)** Serial communication-capable robot arm control program written in C# (written by myself)    **Fig 9)** Smart Premiere database blueprint (created by myself) |

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| **Fig 10)** Picture taking screen with C# and OpenCVSharp 4 applied  A sharpening filter is applied, and it is implemented so that it can be built in the form of an image dictionary in conjunction with the MariaDB database.    **Fig 11)** Image similarity prediction – implemented as a GUI screen using Python and C# Process    **Fig 12)** Image similarity program implemented in Python and VScode (written by myself)  It was written by referring to the contents and books learned in class and searching the Internet. |

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| **Fig 13) Modify the box of product details**  A program that can classify boxes and products was devised by reflecting the opinions of the judges of the team building mid-term evaluation.    **Figure 14)** Barcode function by product |
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| **Fig 15)** Web-based barcode and QR code reporting screen implementation  Developed using jQuery Barcode library.    **Fig 16)** Implementation of QR and barcode recognition system using C#, image processing technology (OpenCVSharp4) and ZXing library |

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| **Fig 17)** Network environment establishment and server establishment for smart logistics/factory environment  The operating system of Raspberry Pi 4 was installed as Ubuntu 22.04, and development environments other than Apache 2.4 and MariaDB were implemented.  Only necessary ports were opened through environment settings such as network IP and port forwarding.    **Fig 18)** Connection between sensor and Arduino UNO R3 Wifi  Implemented to communicate with the server through a web program by performing HTTP POST communication to Arduino UNO R3. |