HAEJUNG KOH PORTFOLIO

**This is Haejung Koh,
a wild-type engineer
who enjoys experimentation in life**

Main skills	• C++, Python, Java, Javascript, PHP, SQL
	• Mathematica, Gromacs, Gaussian 05, Origin, Chem-Draw, TensorFlow
	• Spring Boot, Node.js, Nuxt.js, Three.js, Laravel, pro*C, Adobe flex, FastAPI, Django, Vue.js
	• MySQL, Oracle, MongoDB, AWS
	• Intellij, Eclipse, Visual Studio Code
	• Git, SVN
Repository	https://github.com/MaximHelio
Education	• B.Eng. Computer Engineering
	• B.Sc. Chemistry and Nanoscience
Work Experience	• Samsungcard Digital Service dept. SW Engineer
	• Shinhan Global dept. SW Engineer
	• Sandslab PLC. Web development dept. SW Engineer
Certificates	• Sequential Query Language Development
	• Engineer Information Processing
	• Microsoft Office Master 2010
Interests	• Data analysis, Automatic Program
	• Simulations
	• Help others

Mydata Construction Development of Samsung Card Networking Mobile Application, *Monimo*

https://www.monimo.com/
Senior SW engineer Samsung Card

Skill stack

FE: Javascript-Nuxt.js, Vue.js
BE: Java-Spring Boot 2.x, Oracle

RNRs

FE/BE

PJT Outline

- Developed all screens and functions of Consummation, Point money, Pension, and Insurance
- Developed real-time search and batch processes for representation of consummation in the calendar
- Integrated Mydata, users' financial transactions and activity data, into applications
- Depicted the consummation graphs and applied card product recommendation algorithms according to the consummation patterns

Development of Cyber Security Web Malwares.com

Junior SW Engineer, SandsLab PLC.

PJT Outline

Developed Company solution homepage malwares.com
Published all Front-End user interface
Created an internal API and Private API
Developed payment system Develope
d multi-modal functions Developed a r
eal-time search system
Developed fragmentation search functions (i.e. author = haejung)

Skill stack

FE: Javascript-Vue.js
BE: Java-Spring Boot, MySQL

RNRs

Front-End
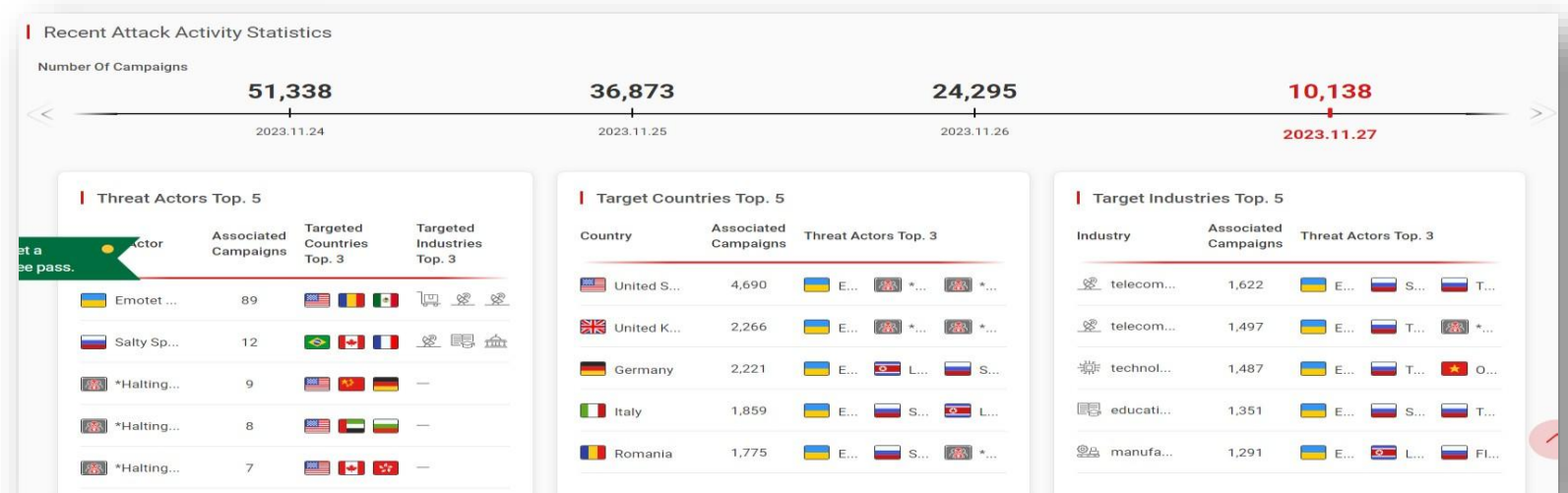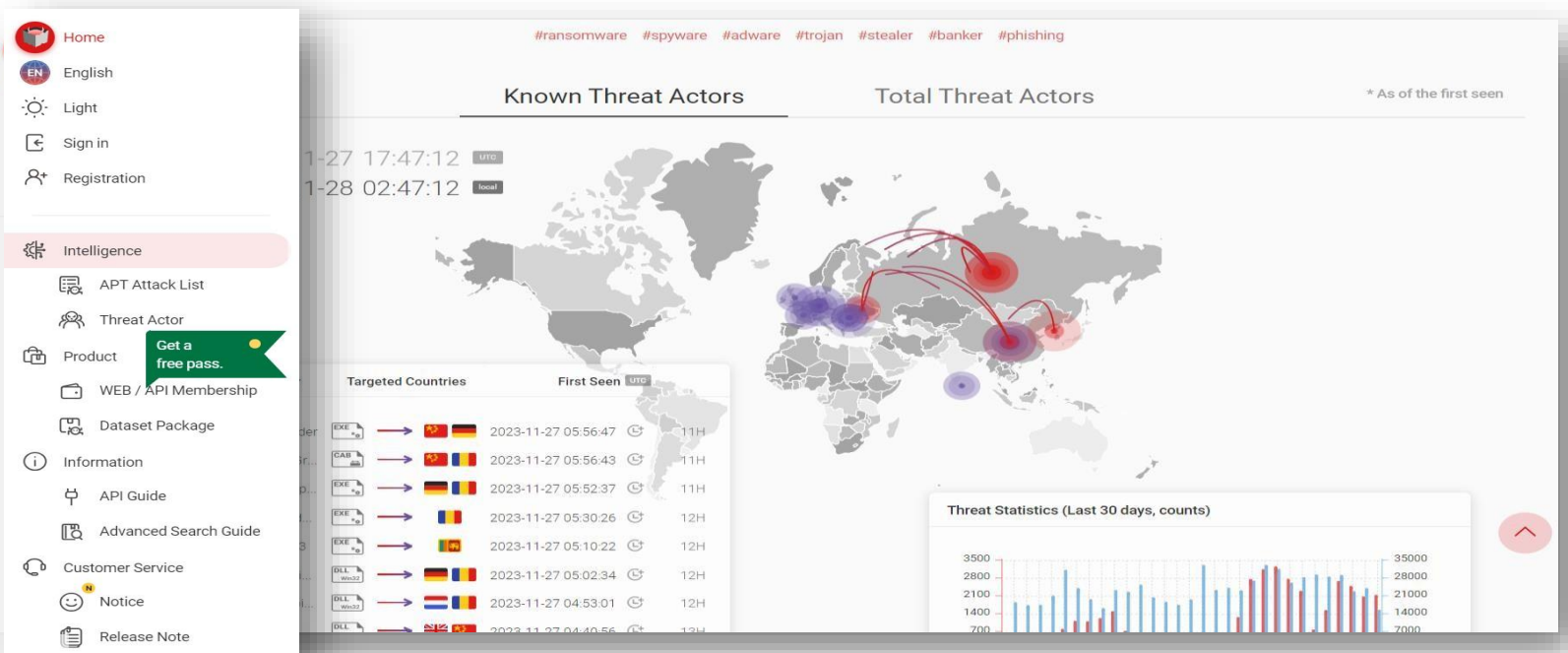
Development of Commercial Web ㉮

Freelancer

PJT Outline

- Developed Commercial Webpage *hansolmeat.shop*
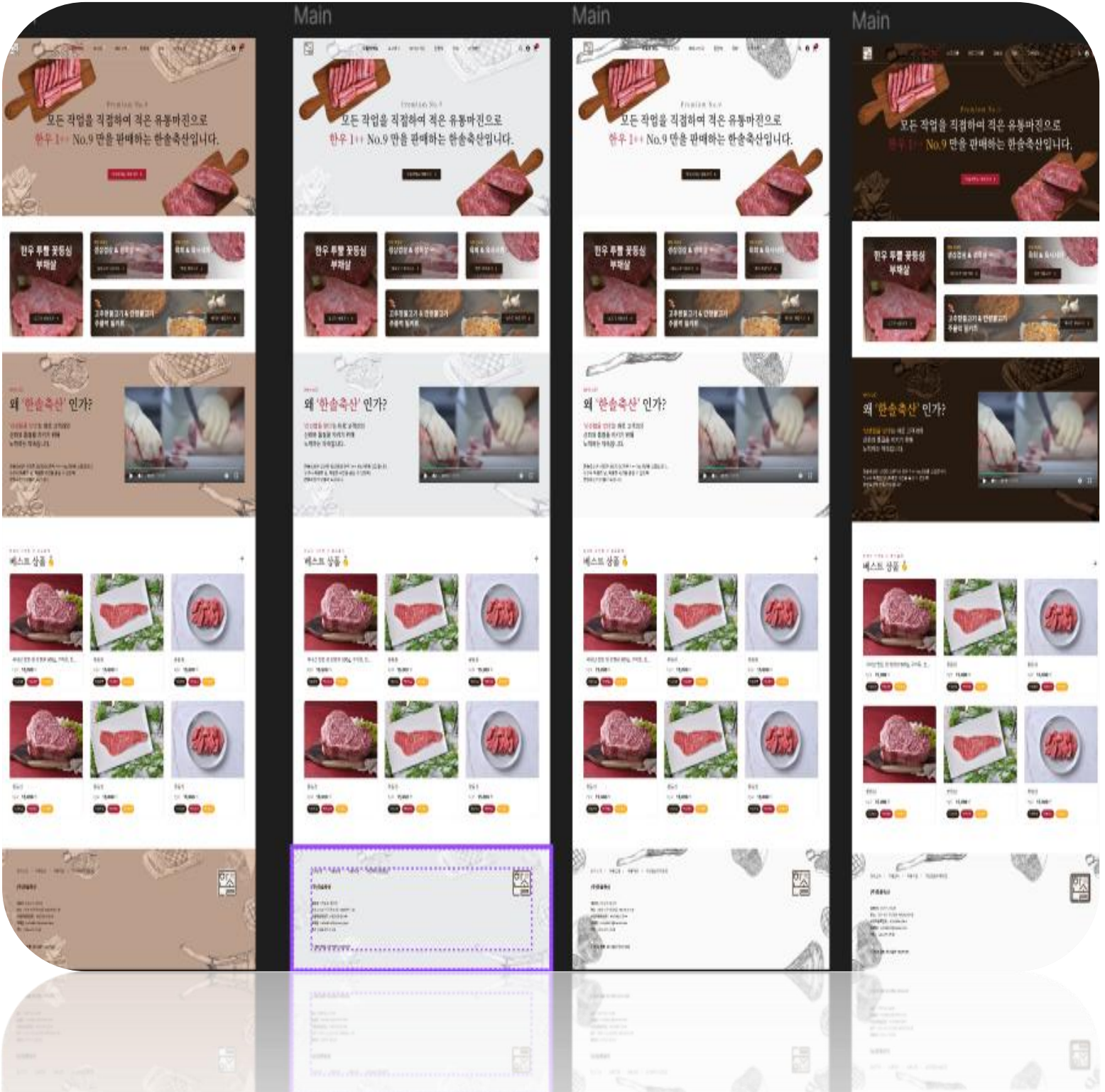- Published all FE/BE/DB part

Skill stack

FE: Next.js
BE: Next.js, MySQL, MariaDB

RNRs

PM, PL

Development of Commercial Web ㉯

Freelancer

- Developed Commercial Webpage *yoonsparenting.com*

Skill stack

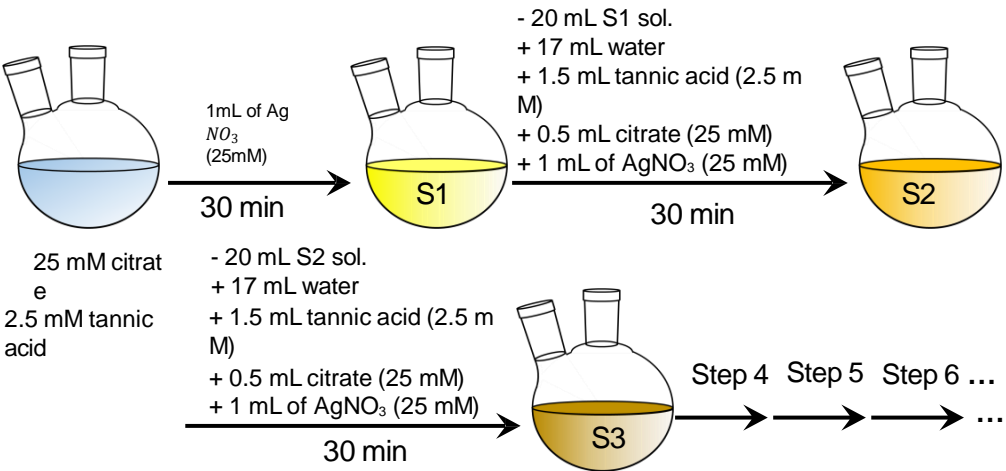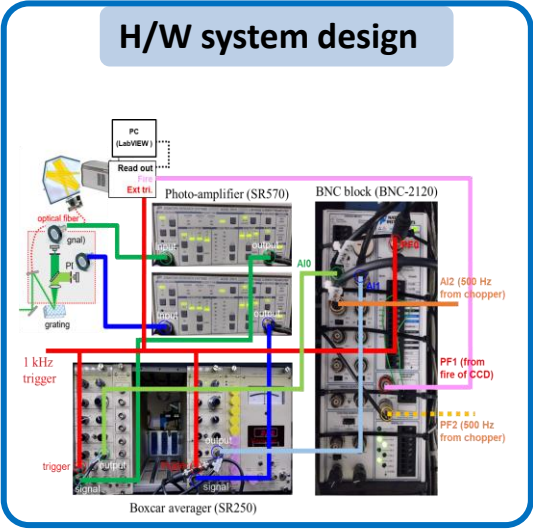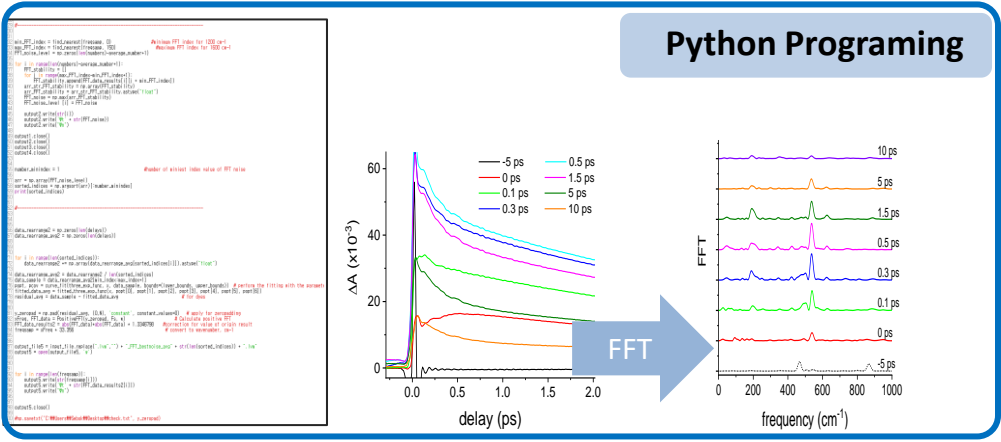Wordpress

Metal-Enhanced Fluorescence

Femtosecond Spectroscopy Lab. Advisor: Dr.Yoonsoo Pang
Gwangju Institute of Science and Technology

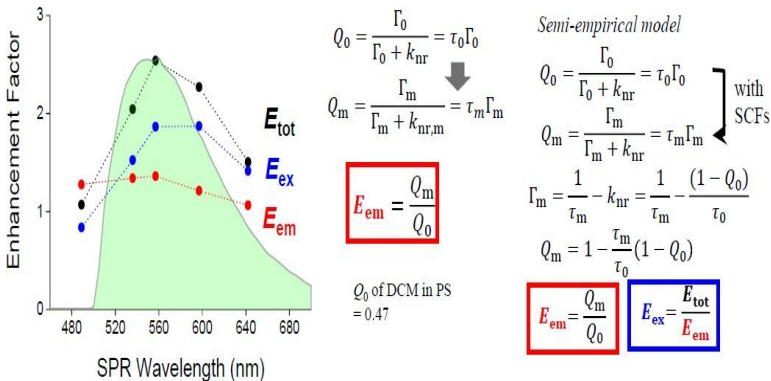Investigated MEF phenomena of DCM & C343 dyes near Ag NPs Analyzed data from TCSPC laser

LabVIEW Programing

Development of femtosecond time-resolved spectrometer system

LabVIEW & Python Programing

Python Programing

H/W system design

- 20 mL S1 sol.
+ 17 mL water
+ 1.5 mL tannic acid (2.5 mM)
+ 0.5 mL citrate (25 mM)
+ 1 mL of AgNO₃ (25 mM)

1mL of Ag NO₃ (25mM)   30 min

S1   30 min   S2

25 mM citrate
2.5 mM tannic acid

- 20 mL S2 sol.
+ 17 mL water
+ 1.5 mL tannic acid (2.5 mM)
+ 0.5 mL citrate (25 mM)
+ 1 mL of AgNO₃ (25 mM)

30 min   S3   Step 4   Step 5   Step 6 …

Quantum Yields of DCM & C343 probed at 405nm in coated thin PS films with SCFs

	Lifetime (ns)	Quantum Yield, Q_m	Emission Enhancement Factor, E_{em}	Total Enhancement Factor, E_{tot}	Excitation Enhancement Factor, E_{ex}
DCM Only	1.59	0.47	-	-	-
DCM with SCF1	1.19	0.60	1.28	1.07	0.84
DCM with SCF2	1.11	0.63	1.34	2.04	1.53
DCM with SCF3	1.09	0.64	1.36	2.54	1.87
DCM with SCF4	1.30	0.57	1.21	2.27	1.87
DCM with SCF5	1.50	0.50	1.06	1.51	1.41

$$Q_0 = \frac{\Gamma_0}{\Gamma_0 + k_{nr}} = \tau_0 \Gamma_0$$

$$Q_m = \frac{\Gamma_m}{\Gamma_m + k_{nr,m}} = \tau_m \Gamma_m$$

$$E_{em} = \frac{Q_m}{Q_0}$$

Semi-empirical model

$$Q_0 = \frac{\Gamma_0}{\Gamma_0 + k_{nr}} = \tau_0 \Gamma_0$$
$$Q_m = \frac{\Gamma_m}{\Gamma_m + k_{nr}} = \tau_m \Gamma_m$$
with SCFs

$$\Gamma_m = \frac{1}{\tau_m} - k_{nr} = \frac{1}{\tau_m} - \frac{(1 - Q_0)}{\tau_0}$$

$$Q_m = 1 - \frac{\tau_m}{\tau_0}(1 - Q_0)$$

Q_0 of DCM in PS = 0.47

$$E_{em} = \frac{Q_m}{Q_0}$$ $$E_{ex} = \frac{E_{tot}}{E_{em}}$$

Molecular Dynamics Simulation of PNIPAM

Computational Polymer Physical Chemistry Lab. Advisor: Dr.Jun Soo Kim
Ewha Womans University

Skill stack

Python, Fortran, CentOs, Gaussian05

Force field: OPLS-AA
Model: Tip4p/2005 for water
Syndiotactic arrangement of side groups made by Gauss View 5.0 program for PNIPAM

PJT Outline

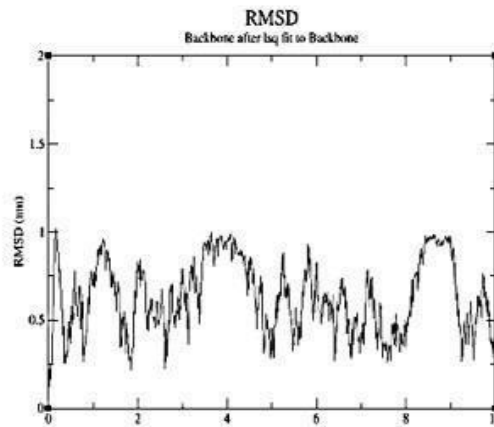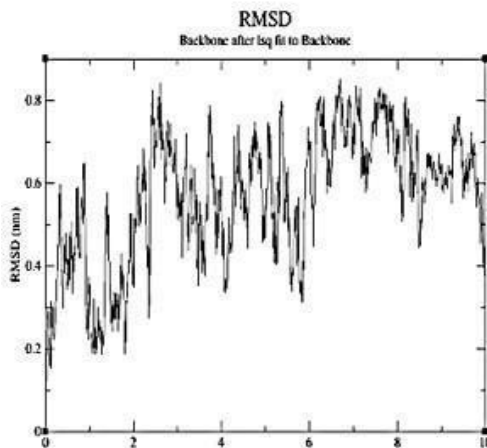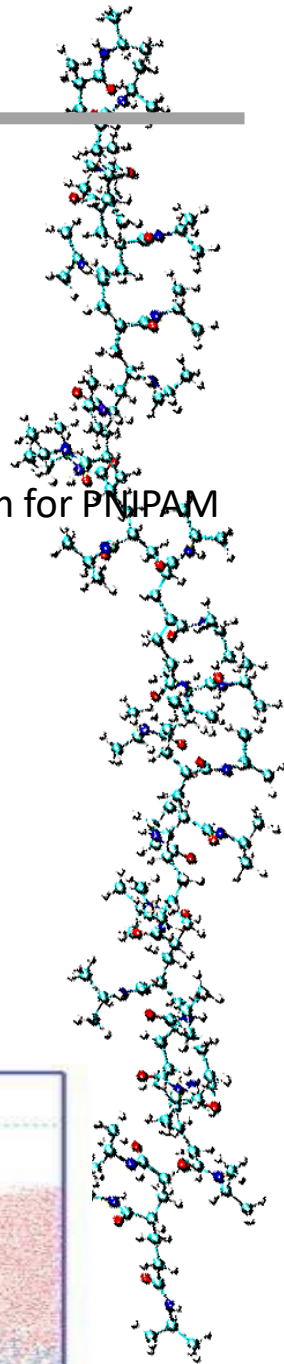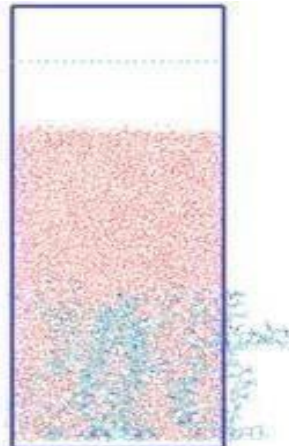-MD Simulation
-Data Analysis using FORTRAN

Figure 5. RMSD of water(left) and PNIPAM(right) during the production MD
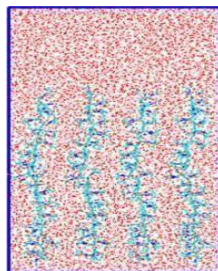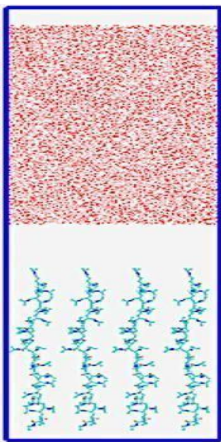
- Developed PNIPAM NXN multi-chains system and conducted MD simulations

- Analyzed Radius of gyration and intra-chain distances to elucidate collapse-swelling phase transitions

- To advance the research further, development of coarse grained parameters are necessary with reduced degrees of freedom by overcoming time-scale limitations

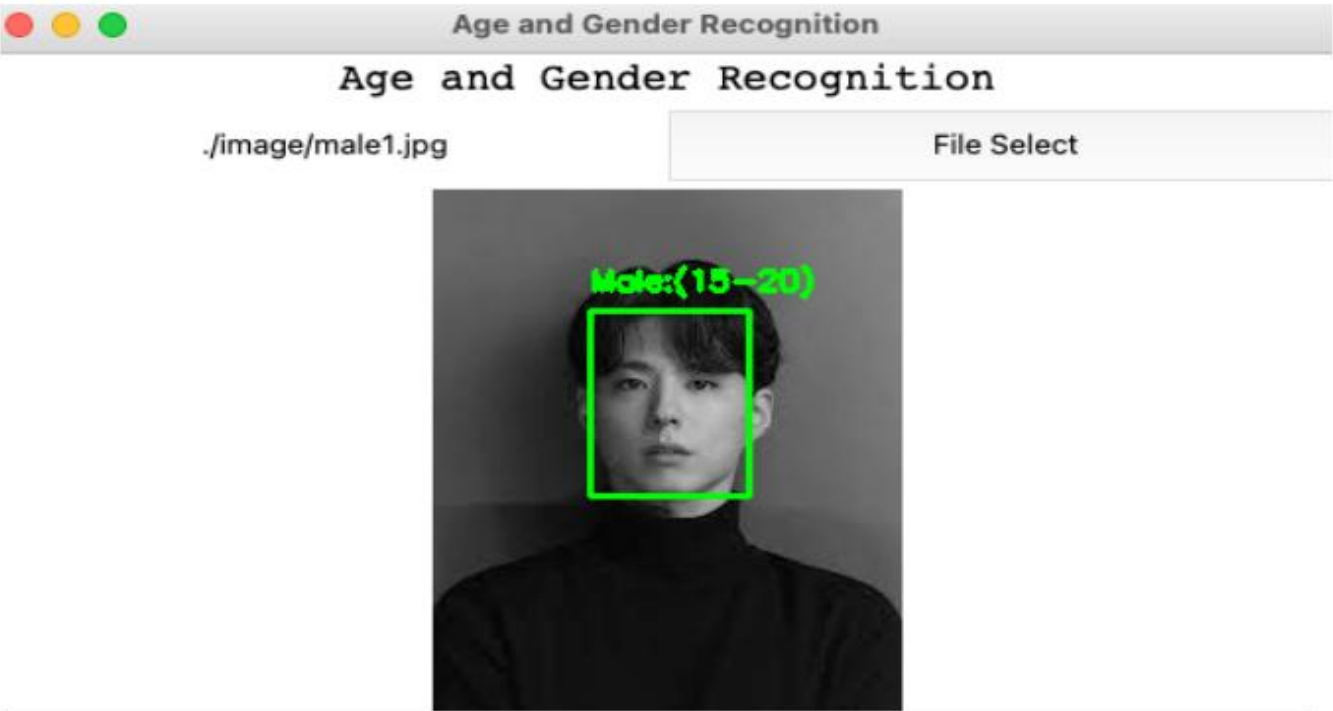- Follow-up Study: Interaction of PNIPAM molecules with DNA

Face-Age Detector

PJT Outline

- Developed face-age detector program using Caffemodel

Skill stack

DNN, caffemodel, PIL, Caffe framework

Gender & Age Detection

Age	Probability(%)
(0-2)	0.70
(4-6)	21.21
(8-12)	15.29
(15-20)	54.71
(25-32)	3.59
(38-43)	3.47
(48-53)	0.37
(60-100)	0.66
Gender	Probability(%)
Male	96.59
Female	3.41

ML-for-Chem
https://github.com/MaximHelio/ML-for-Chem

BOJ Study Batch Alarm

https://github.com/MaximHelio/BOJ-cote-batch

Personal PJT

Skill stack
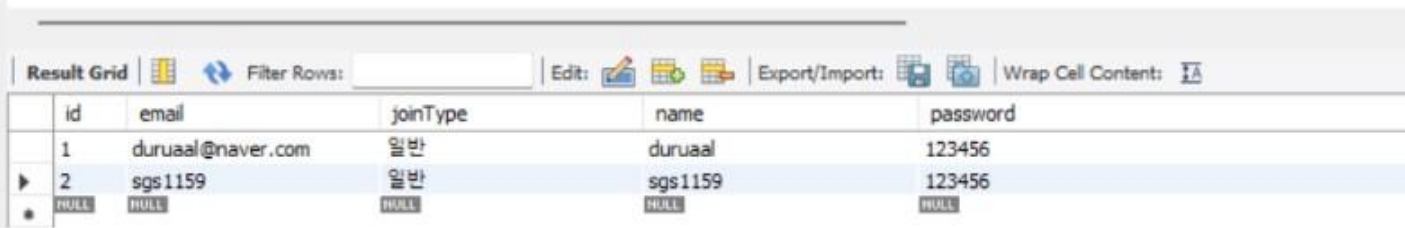
FE: React.js
BE: SpringBoot JPA, Spring Batch

PJT Outline

Every day (MON-SUN) at 00:10 Check the number of problems solved by BOJ User

1. Run SBApplication
2. Enter the following into the kknni_tb_user table in MySQL client

Result Grid		Filter Rows:		Edit:	Export/Import:	Wrap Cell Content:
id	email	joinType	name	password		
1	duruaal@naver.com	일반	duruaal	123456		
2	sgs1159	일반	sgs1159	123456		
NULL	NULL	NULL	NULL	NULL		

3. Run at localhost:9040/user/rank > result

#Algorithm

Participants: Sgs1159,Duruaal

No	Date	Title	Baekjoon
1	2023-02-19	Duruaal	X (1)
2	2023-02-19	Sgs1159	X (0)
3	2023-02-19	Duruaal	X (1)
4	2023-02-19	Sgs1159	X (0)
5	2023-02-19	Duruaal	X (1)
6	2023-02-19	Sgs1159	X (0)

Github | Instagram

Blog Automatic Writing Bot

https://github.com/MaximHelio/btw_newedit

Personal PJT

Skill stack

Node.js
Jade

PJT Outline

A bot that automatically writes to a blog when run.
Achieved profits.

Ad profits

Rating-based Movie Community Service Web

https://github.com/MaximHelio/SSAFY-Final-pjt-SGMovies   Personal PJT
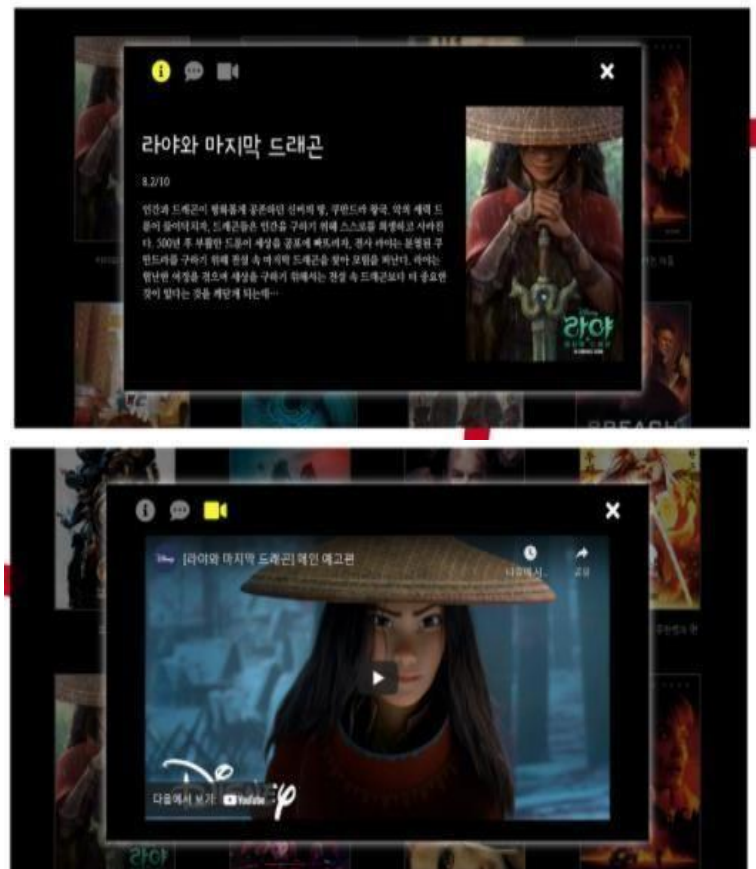
Skill stack

FE: Vue.js
BE: Django
YouTube API, TMDB API, JWT, Sqlite3

PJT Outline

Developed a movie information bulletin board, including comments and recommendation functions
Implemented Search algorithms for content corresponding to keywords users inserted.

회원가입 및 로그인을 하면,

최신영화와 모든 영화를 볼 수 있어요.

영화의 테마에 따라 볼 수 있고,
검색을 할 수도 있어요

감명 깊었던 영화를 골라주면,
영화 추천을 해줘요!

- JWT Login
- Applied YouTube API
- Recommendation system