

# Ryoung Woo

HOPE JOB : SOFTWARE ENGINEER, DATA SCIENTIST

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"I want to grow into a better mathematician and a team player."

## Summary

As a developer, I have grown up as a mathematician and team player for six years. Like a puzzle game, I enjoy thinking logically and procedurally. At first, I should focus on small pieces. The sooner I predict the completed view, the faster I can solve the puzzle easily. Like a college basketball team player, I enjoy cooperating passionately. Whether break time in game or train time before game, we discussed a lot like followings. What is needed, How to apply it, Which is better, finally Whether the decision is good for my team. I want to grow into a better mathematician and team player.

## Experience

### BISTel, Co.

SOFTWARE ENGINEER, DATA SCIENTIST

Seocho-gu, Seoul City

Nov. 2013 - Aug. 2019, 5 years 10 months

- Research on new technology of IT and new idea of academic paper. Share this with team.
- Gather and define requirement from external client and internal stakeholder.
- Develop or upgrade a product according to the above technology, paper, requirement.
- Deploy the product to client and guide them to solve their problem by it.

### Korea Information Engineering Services, Co.

INTERNSHIP

Bundang-gu, Seongnam City

Sep. 2013 - Oct. 2013, 2 months

- Check quality assurance for product features to be released.
- Refine product user documentation for a user's point of view.

## Education

### Daejin University, Ministry of education, science and technology, Soldesk

COMPLETION OF COURSE, HADOOP EXPERT FOR BIGDATA STORAGE AND MANAGEMENT BASED ON CLOUD COMPUTING

Jongno-gu, Seoul City

May. 2013 - Aug. 2013, 4 months

- Because I completed this course well, I was able to participate in the internship.

### College of Education, Kangwon National University

BACHELOR OF SCIENCE, MATHEMATICS EDUCATION

Chuncheon City, Gangwon-do

Mar. 2004 - Feb. 2012

- Scholarship on 1st year 2nd semester, 3rd year 2nd semester.
- Semi runner up of college basketball competition on 2nd year.

## Project

### Develop eDataLyzer

SOFTWARE ENGINEER, DATA SCIENTIST

Seoul, S.Korea

Nov. 2013 - Aug. 2019, 5 years 10 months,

more than 30 M/M

- The eDataLyzer is a existing semiconductor analytics product for wafer yield map classification and root cause correlation.
- The goal of this project is to redevelop the eDataLyzer for big data.
- So we have led this project in three ways.
- 1st, reconstruct the architecture to micro services from monolithic one.
- 2nd, reorganize to a role based teams from a unified team.(Client, Server, Algorithm, Research, Technical Sales/Support.)
- 3rd, redevelop by Java and C# not only C#
- I belong to Algorithm team, mainly focusing on parallelizing algorithm by new big data technologies.
- In briefly, I have done three ways of parallelizing algorithms.
- 1st, redevelop the algorithms by Java, PostgreSQL, Spring for small data.
- 2nd, redevelop the algorithms by non Hadoop based technologies(GreenPlumDataBase PL/Java, Oracle-R) for big data.
- 3rd, redevelop the algorithms by Hadoop based technologies(Hadoop, BDA, Hawq, HBase, Spark, Eco system) for big data.
- In this project, we have a lot of semiconductor clients as follows.
- Korea(Samsung Electronics, SKHynix, SKSiltron), Japan(Toshiba, Sharp), Taiwan(TSMC), China(BOE)
- This project type has been extended to diversity.(PoC, Pilot, Production)

## Apply Reinforcement Learning on semiconductor production process management

Seoul, S.Korea

RESEARCHER, SOFTWARE ENGINEER

Dec. 2018 - Aug. 2019, 9 months, 6 M/M

- This project type is a pre-production research.
- Chose 8-puzzles as a reinforcement learning environment for the following reasons.
- 1st, in order to collaborate with teammates, I need the generalized environment is easy to apply Graph Theory.
- So I picked up operation management of semiconductor's production.
- 2nd, in order to find suitable environment not complex one, I pick up 8-Puzzle as a simplified the operation management of production on semiconductor.
- Focus on shortest path not yield, productivity, stability, automation rate, realtime, etc.
- The recent research situation is as follows.
- 1st, solve 8-Puzzle by Dynamic Programming and compare by the other algorithms such as Shortest-path tree, Dijkstra.
- 2nd, fail to solve 8-Puzzle by QLearning, Deep SARSA, Polish Gradient.
- The rest of the research is to find out why and how to overcome it.

## Develop Matrix Profile for predict failure of car production line's transfer system

Seoul, S.Korea

SOFTWARE ENGINEER

Jul. 2017 - Dec. 2017, 6 months, 2 M/M

- The goal of this project is to predict a shutdown of motor based on time series sensed data.
- Client's product-lines(blue-collars) found out a shutdown once a year and require to solve it.
- But both client's office-lines(white-collars) and our previous algorithm didn't predict it.
- Because the algorithm focus on a vibration analysis on rotary machine.
- So we created this project as a subproject of the previous one and led this project as below.
- 1st, we found out the matrix profile which is a suitable algorithm for time series predict.
- 2nd, I implemented the algorithm in python and deploy it to client. And solve the problem successfully.
- 3rd, I implemented it in java and integrate with UI. Teached clients how to solve their problem through our product.
- The client of this project is Hyundai Motor. And the project type is PoC.

## Develop Predictive Maintenance for semiconductor equipment

Seoul, S.Korea

RESEARCHER, SOFTWARE ENGINEER

Nov. 2016 - Mar. 2017, 5 months, 4 M/M

- The goal of this project is to develop predictive maintenance on semiconductor etching equipment.
- In order to change client's empirical maintenance(condition, time), we led this project as below.
- 1st, redefine input data through Self Organizing Map. And define health score as distance of each vectors of input data and observation vector.
- 2nd, apply Double Exponential Weighted Moving Average to the health score. And get Remaining Useful Life for each vectors of input data.
- But we got a feedback that our product was too late for client. So we additionally led this project as follows.
- 1st, detect the bottle neck of our product as the DEWMA not the SOM.
- 2nd, apply Spark and HDFS on the DEWMA. And find out a tuning point.
- The client of this project is SKHynix. And the project type is pilot.

## QA & Documentation on new Product

Seongnam, S.Korea

INTERNSHIP

Aug. 2013 - Oct. 2013, 3 months, 5 M/M

- During the internship, I did the following activities.
- 1st, check functional and nonfunctional quality factors for each feature in the new product.
- 2nd, modify the previous document by the user's perspective.

## Skills

<b>Programming</b>	Java, SQL : 6 years on production, Python : 2 years on papers research.
<b>Backend</b>	Spring Frameworks : a year on production.
<b>Database</b>	PostgreSQL : 6 years on production, Oracle, HBase : a year on production.
<b>Bigdata</b>	GPDB : 6 years on production, Hadoop, Spark : 4 years on production.
<b>ML/AI</b>	Nvidia CUDA, Keras, Tensorflow : a year on papers research.
<b>DevOps</b>	Linux, Docker, On premise Cloud(KVM), Public Cloud Azure, AWS : Use these as utility tool on projects.
<b>Research</b>	Read and implement the latest papers by python.
<b>Leadership</b>	Lead projects successfully for a year.
<b>Communications</b>	Communicate smoothly with various stakeholders : aggressive client, academic advisor for government, etc.
<b>Languages</b>	Native in Korean, Limited working proficiency in English.

## Objective

### Senior, Data Engineer (EDW Data Processing)