

# Dept. of Sports Analytics

The Department of Sports Analytics (SA) is established to train professionals who are interested in sport data sciences. It provides a knowledge and skills of the exercise science and kinesiology as well as data sciences in general, which are appropriate in applying to sports industry. The SA graduate program offers master and doctoral degrees and train the graduate students to comprehend the data sciences including data management, mining, and analysis skills such as statistical analysis, machine learning, and deep learning. While the sociocultural environment is ever changing a demand of human oriented services, platform, hardware, and software are growing enormously. SA focuses on training human resources targeting knowledge building, skill improvement, and field experiences.

## Courses

### Core Courses

#### • **Sports Analytics Seminar**

To learn the most advanced analysts through the current status of domestic and international sports analytics and special lectures by experts/researchers.

#### • **Sports Big Data Seminar**

To cultivate the ability to understand and analyze big data obtained in convergent research areas with sports, health, and rehabilitation.

#### • **Sports data analysis programming**

To Learn programming logics and basic Python coding with sports data, and analyze various types of structured and unstructured data.

#### • **Sports industry field practice**

To experience sports data science and the practice of sports industry-related institutions, research institutes, and industrial sites.

#### • **Research Seminar in Sports Data Science**

To learn research methods while finding problems and solutions for research papers as well as how to build research design and apply data analysis in sports fields.

#### • **Research Ethics and Thesis Study**

To learn essential research and learning ethics as a researcher, such as research misconduct, data management, author identification, and human subject research ethics.

#### □ **Sports Analytics Major**

- **Motion Analysis Data Science**

Develop the ability to conduct research by applying the video data collection procedure and analysis method used in the sports field.

- **Biometric Data Analytics**

To learn the exercise-related data collection method and data processing method to develop the ability to properly interpret and draw conclusions about research results.

- **Health Data Analytics**

To improve interpreting health-related research results by cultivating the ability to understand and analyze the interrelationship between research variables or data on health using tools such as R or Python.

- **Sports performance Analytics**

To learn how to use photo instrumentation in order to understand the dynamics of movement of the human body, and develop data processing and interpretation skills of exercise technology analysis data.

- **Sports Marketing Analytics**

To understand the basic theories and concepts of sports marketing and carry out a marketing strategy establishment project that analyzes sports marketing data.

- **Sports data mining**

To learn how to predict possible outcomes in sports events, the application of finding anomalies, patterns, and correlations in large data sets through various analysis techniques.

- **Sports data visualization**

To learn techniques to visually express data, and develop the ability to communicate information clearly and effectively in order to find the hidden value in sports-related data.

- **Sports Network Analysis**

By analyzing large-capacity text data such as sports-related news, blogs, and social media, it cultivates the ability to conduct research that can derive new theories and phenomena.

- **Text Analytics**

After learning text analysis techniques such as sports-related text collection and conversion through crawling, and opinion mining, a project to utilize the analysis results in business is carried out.

- **Sports Big Data Machine Learning**

Students learn methodologies that can be applied to the field by combining theory and practice in a series of processes of finding and modeling relationships, patterns, and rules between data obtained from sports and converting them into useful management information.

- **Introduction to Deep Learning**

Understand the basic principles of deep learning algorithms, learn the latest deep learning models such as CNN, RNN, and Reinforcement Learning, and practice applying them to sports-related big data.

- **Spatial Big Data Analysis**

Develop the ability to efficiently collect, store, and manage spatial big data related to regular, semi-structured, and unstructured sports, and learn techniques for extracting information through real-time and integrated analysis.

- **Visual artificial intelligence**

By learning visual artificial intelligence that can be applied in the sports field, the research ability to develop predictive models for improving athletic performance and performance is developed.

- **Sports Convergence Research Method**

Learning experimental design and research methods using sports-related data to develop academic thesis writing skills.

- **Sports Analytics Thesis I**

Deriving research questions using sports and health data, and learning the research report and thesis writing process step by step.

- **Sports Analytics Thesis II**

Learn the process of completing research papers designed using sports and health data and submitting them to academic journals.

- **Independent Study**

By discovering students' research interests and social current issues, students acquire independent competence and experience in specific research activities as a researcher.

- **Statistics in Sports**

To foster the ability to analysis data in sports field by understanding the mathematical theory of statistical data.

- **Research Method in Sports Performance Analysis**

To examine previous literatures in order to equip you with relevant knowledge and skills to undertake appropriate research in their subject areas.

- **Sports Video Analysis**

To enhance tactical understanding of sports by cultivating the ability to grasp the tactical patterns of team and players.

- **Sports Performance Tactics**

To enhance tactical understanding of sports by cultivating the ability to grasp the tactical patterns of team and players.

- **Sports Performance Analysis Programming (Practicing SportsCode software)**

To learn the principle of operation for sports analysis software(SportsCode) used to analyze sports in the applied field.

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