

Information and Management Systems Engineering

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Bachelor's / Master's Program in Engineering
Information and Management Systems Engineering







Experimental Psychology Laboratory

Associate Professor / AKIMOTO Yoritaka

- Let's find out how the mind and brain process information through "experiments"!
- Everything in human's daily social life is subject to study!
- Success and failure are both important "experiences"!

Associate Professor / AKIMOTO Yoritaka

He is a well rounded teacher who is usually kind and sometimes enthusiastic in his teaching. He kindly discuss students' questions with them, creating an environment in the laboratory where students can easily ask for advice on even the most trivial matters.



Research Content

This laboratory regards human cognitive activity as an information processing system and conducts research to understand its processing process. In our research, we evaluate human cognitive activity by analyzing objective evaluations measured mainly by low-cost electroencephalographs and subjective evaluations collected through questionnaires and other methods. Although the word "psychology" may conjure up images of the humanities, these studies also require knowledge of the sciences in areas such as the analysis of EEG data and statistical processing of questionnaires. From data collection to analysis and evaluation, the methods and contents of these studies are discussed between faculty members and students.



EEG Experiment

A Day in the Lab

Basically, there are no core hours, and each student works independently on his or her own topic of interest while conducting research. In weekly laboratory seminars, we read English papers together and hold study sessions for creating experimental programs and analyzing data. In addition to information exchange and consultation among the members, we also practice presentations just before conferences. In addition in-lab seminars, we hold a joint communication with the Perceptual Informatics Laboratory once a week. I have many opportunities to participate in presentations academic conferences, which provide me with opportunities to review my own research and keep me motivated.



Laboratory Members

Thesis Subjects

- (B)Measurement of Brain Activity of Speech Production Directed to Infants Using Low-cost Electroencephalograph
- (B) Measurement of Brain Activity During Computational Tasks with Low-cost Electroencephalograph
- ▶ (B) Performance Changes in Piano Playing Task Through Multiple Practice

Major employers of Graduates NAGAOKA SHINKIN BANK

he number of

Writer: WATANABE Rei, Information and Management Systems Engineering (Ojiya high school)

Experimental Psychology ElectroEncephaloGraphy Cognitive Science

75

教員名

AKIMOTO Yoritaka





Perceptual Informatics Laboratory

Associate Professor / Katsuko T. NAKAHIRA

- Let's elucidate the back side of human behavior!
- Let's immerse in your favorite research!
- Let's develop better services and systems!

She is usually cheerful and also with both a sense of humor and intelligence. She often gives us advice from a shrewd observation. We trust her because she takes care of her students even when she is busy.



Research Content

The purpose is to scientifically understand how cognitive activity is performed in human daily behavior. In our daily activities, we analyze human cognitive behavior by collecting and analyzing data using gaze measuring instruments and simple electroencephalographs, and by constructing simulations. From data collection to analysis and evaluation, we are researching while discussing methods and contents with teachers and students.













Human reaction to the type of emotion-inducing word. (upper side)statistic data. (lower side)two dimensional histogram of reaction points vs emotional value.

A Day in the Lab

Since we don't have core time, we have free time to go to the laboratory and do research. We hold a seminar once a week, share the progress of each research and what we have studied with the whole laboratory, and proceed with the research by finding problems. The theme of the research is determined by the interests of the students, and if you have a problem, you can receive the support of teachers and seniors who have various knowledge. Not only research activities but also student life can be fulfilled.



picture when seminar

Thesis Subjects

- (M) ACT-R simulation of acquisition, utilization and error generation process of knowledge related to note value judgment
- (M) Gravitational wave analysis by Bayesian deep learning assuming Laplace distribution as prior distribution
- (M) Eye tracking analysis in second language acquisition and possibility of applying learning design

he number of hD Graduates

Major employers of Graduates

NEC Platforms

O PFU

Nisshin Soft Engineering

D BSN INET

TAIYO KOKI

- Canon Imaging Systems
- MOBIUS CORPORATION
- O NTT DATAI
- FUJITSU HOKURIKU SYSTEMS
- Mitsubishi Electric Mechatronics Software Corporation

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Writer: NOGAMI Shin, Information and Management Systems Engineering (Sado High School)



NAKAHIRA T. Katsuko





Brain Function Measurement Action Selection Communication Space Network Ecoogy







Sports Engineering and Bio-Informatic Laboratory

Professor / SHIONOYA Akira Associate Professor / OHASHI Satoshi Assistant Professor / NAGAMORI Masahito Assistant Professor / UCHIYAMA Hisashi

- Scientifically elucidate and technically reproduce "Sports"
- Enjoy Sports
- Enjoy Research

Supervisor Professor / SHIONOYA Akira

Dr.Shionoya is from Sapporo city, Hokkaido. He is currently mainly engaged in research on sports wheelchairs. His hobby is sports. He especially likes skiing and tennis all of them. We think he is a very wonderful professor with kindness and humor.



Research Content

In our laboratory, we are conducting research to elucidate the characteristics of human beings dynamically and physiologically about the mechanisms of sports equipment such as skiing and tennis and welfare equipment.

Specifically, we evaluate the relationship between humans and sports equipment conducting both the measurement of muscle activity and the mechanical dynamics measurement of sports equipment during

sports.
Our research contributes to the medical and welfare fields by improving the performance of sports and clarifying and preventing the causes of sports injuries.



Motion Capture System

A Day in the Lab

We can select subjects of graduation theses and master theses according to their interests. We have been doing research on our own under the support of our professor.

Our laboratory's seminar will be held once a week to discuss the progress of each research during the semester. In the laboratory, these are some experimental devices to evaluate the

relationship between humans and sports equipment.

We conduct experiments in the every sport field, for example gymnasium, training room and so on.



Experiment Image

Thesis Subjects

- ((M))Estimation of wheelchair speed for competition wheelchairs using an inertial sensor attached to one arm
- ((M)) Parallel Element Measurement and Analysis of Shooting Motion in Wheelchair Basketball Games
- ((M))Self-monitoring support for daily stress using an optical wearable heart rate system

The number of

Major employers of Graduates

- MITSUBISHI MOTORS CORPORATION
- SCSK Corporation
- Pukuda Denshi Co., LTD.
- Mazda Motor Corporation O MOBIUS Co., Ltd.
- D Bridgestone Corporation
- NIPPON SEIKI CO., LTD. Kowa Company, Ltd.
- SoftBank Corp.
- O YONEX CO., LTD.

Writer: OKAJIMA Izuru, Information and Management Systems Engineering (Kashiwazaki Senior High School)



教員名

SHIONOYA Akira OHASHI Satoshi NAGAMORI Masahito UCHIYAMA Hisashi





Biological Measurement Sports Engineering Welfare Engineering Wheelchairs





Ambient Biomedical Engineering Laboratory

Professor / Shusaku NOMURA

- Ambient Feedback System
- Ambient Biomedical System
- Human Stress Evaluation

Supervisor Shusaku NOMURA

Engaged in science, engineering, and medicine studies using biosignals and biomarkers. He has high academic standards, sense of responsibility, humor and tolerance, plus, he is good at encouraging students. Moreover, he can speak fluent English, and some Spanish as well. All his students hold him in high esteem.



Research Content

This laboratory conducts research to evaluate the effects of the surrounding environment or physical environment on humans, such as sound, images, and airbags, as well as to evaluate biological indicators under specific conditions.

RESEARCH TOPICS

- 1. Analysis on the effects of VR images reflecting biological information from the viewer.
- 2. Effects of changing music tempo during certain tasks.
- 3. Long-term stress analysis by hormones extracted from hair, nails,
- 4. Effects of beds that change posture in conjunction with breathing



Experiment using VR images along with biologocial

A Day in the Lab

(1) Research Time

No core time in this laboratory, except for one weekly meeting. Each student decides his/her own time for activities. Many members come to the laboratory after class or before noon. Sometimes there are no members in the lab due to conducting experiments.

(2) Laboratory Atmosphere

Friendly laboratory where we can do serious work, and everyone respects each other's space. We always help each other with research activities, especially with experiments.

(3) Laboratory Events

(3) Labolatory events Drinking parties, BBQs, and other events! A lot of chances to get to know each other and talk with professors.



Commenting in group about how to analyze the data

Thesis Subjects

- (M) Physiological and Psychological Evaluations Study on Bio-Signal Interactive Virtual Reality System
- (M) A Field Study on Physiological Effects of Aroma Exposure at Bedtime
- (M) Alleviation of Physiological Stress Response by Orange Aroma Administration

The number of

Major employers of Graduates

- Nomura Research Institude, Ltd.
- The Hokuetsu Bank, Ltd.
- Niigata Sogo Television, Co, Ltd.
- NTT DATA i CORPORATIOM
- Panasonic Corporation

- YKK AP Inc.
- Canon Inc.
- Mazda Motor Corporation
- KDDI CORPORATION
- ALPS ELECTRIC CO., LTD.

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Writer: Elias Alejandro MENDIOLA VAZQUEZ, Information and Management Systems Engineering (Universidad de Monterrey (UDEM))

教員名

NOMURA Shusaku





Ambient Biomedical Systems Ambient Feedback Systems Virtual Reality Stress Hormone Analysis



Theoretical Life Science Laboratory

Associate Professor / NISHIYAMA Yuta

- Take the natural-born intelligence to full open.
- See what you don't see. That's the reality.
- Create IT to reach the outside of understanding.



Associate Professor / Yuta NISHIYAMA

Prof. Nishiyama is a very friendly person in terms of personality, so all students can talk to him freely at any moment. Furthermore, when preparing presentations and thesis, he carefully examines the contents and gives appropriate advice and guidance.



Research Content

We do empirical and theoretical researches on unusual cognition/ behavior in unknown/changeable environments, through which aiming to understand usual states of them. Most members address how the wholeness such as self-awareness and temporo-spatial perception emerges from multisensory signals that are hardly distinguished one another. We develop wide variety of novel experiments and use them to reveal a relationship between life and the world. They may extend the concept of interfaces in an engineering sence.



Experiment on self-awareness using VR

A Day in the Lab

Whe have meeting to review literature and to discuss study progress every week. Other than that, every member conducts their research in their ways. The research theme is decided after repeated discussions with Prof. Nishiyama on matters of student's interest. Some are always in the lab, others are studying in their own homes or elsewhere, so they can do their research according to their lifestyle. In addition, events with other laboratories are held several times a year.



Student room with a view

Thesis Subjects

- (M) Study on diversity of rule-extended substitution system
- (M) Study on behavioral plasticity by repeating corkscrew-style digging of soldier crab, Mictyris guinotae
- (M) Effects of altered self-body awareness on pain perception

The number of

Major employers of Graduates

- Sizebook KK
- Shikoku Electric Power CO., INC
- A IS Inc
- Mitsui Bussan Secure Directions, Inc.
- BOSCH

Writer: SAWADA Hikaru, Information and Management Systems Engineering (national Institue of Technology, Akashi College)

キーワード

SBC medical group

VERISERVE

Cognitive science Animal behavior Complex systems Consciousness

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教員名

NISHIYAMA Yuta









3E(Energy • Economy • Environment)

Professor / Li Zhidong

- □ "Isn't it nice" is the biggest praise
- Labs that need independence
- You are the protagonist of a carbon-free society.



http://kjs.nagaokaut.ac.jp/zhidong/inde

Supervisor Professor / Li Zhidong

He is a visiting professor at "the institute of Energy Economics of Japan" and "the energy reserch institute National Development and Reform Commission of China". He is willing to provide students with various topics and research reports. His hobby is jogging, and he often participates in city marathon events.

Research Content

In the current social system, ploblems such as global warming and depletion of energy resources have occurred. These are getting more serious and are having a big impact on us. Therefore, a low-carbon society that enables sustinable development is needed. The 3E Laboratory makes institutional design and policy proposals from an econometoric perspective, talking into account the interrelationships between "energy, enviroment and econoy". We are researching energy and environmental issues that are approaching the realities, making full use of economic theory and statistics, both Japan and overseas, and studying the construction of social systems aimed at solving them.

the seminar situation

A Day in the Lab

Our laboratory basically has the stance of "you can study anytime, anywhere" and has no core time. However, it is required to produce results, and in the seminar twice a week, all students will always report progress on their own research, as well as the latest news on energy trends and environment issues that change daily is shared and discussed. In addition, there are seasonal events, so that you can spend your research life in a good atmosphere regardless of grade or

study in 3E lab

Thesis Subjects

- ▶ (B) A study on low environment-load type energy supply and demand system at university
- (M)Econometric analysis of Japan's regional solar power generation influential factors and promotion measures
- (M) Economic analysis on the effect of expanding the introduction of electric vehicles and solar power in homes on electricty supply-demand

he number of

Major employers of Graduates

NTT FACILITIES

JCOM

East Japan Railway Company

Komatsu

CvberAgent

Hitachi Solutions

PFU Mizuho

recochoku

D FUJITSU YFC

80

Writer: SAITO Kazuki, Information and Management Systems Engineering (Sanjo high school)

教員名

Li Zhidong





econmy environmental energy low-carbon





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Management Sociology Laboratory

Professor / Nobumichi WATAHIKI

- Entrepreneurship students are welcome
- Study modern history of Japan scientifically
- □ Conduct management, information, and statistics

Supervisor Professor / Nobumichi WATAHIKI

Prof. Watahiki's study is in the field of engineering and sociology. In addition, he studies various fields eagerly. He has connections with the various types of industry without being kept in the field. The students of this laboratory can have valuable experience and relationships.



Research Content

"Human, Thing, Money" are three kinds of objects of company management. "Human" is mainly managers, employees, customers, or organizations themselves that make up a company. Because of this, we are thinking about it to be an important element in the industry development. In this laboratory, we study the process of the industrial development of Niigata of the Meiji period. We perform the analyses of a network analysis and the geographical factor for them. And we analyze the relations with a result and the achievements that we got from questionnaires about human relations into the company.



Relationship Between a Company and its Board Member (1926)

A Day in the Lab

In this laboratory, we do a presentation about the contents of the theme that a student has once a week. A professor and the students at all school years gather for the seminar. Because so about discovery and the different fields that are new from the exchange of opinions. Other than the weekly seminar, students' study at their favorite time. We do the personal work with the PC basically in the laboratory, but sometimes we go to hear the story of the person of the local company and go to the history museum related to our study.



Visit of Historical Museum in Nagaoka

Thesis Subjects

- (M) Analysis of Entrepreneurial Networks Using GIS in Niigata after the Decline of the Petroleum Industry
- (M) Formation of an Entrepreneurial Network in the Pioneering Era of Hokkaido
- (M) Development of CSCL System for Face-to-Face Class and Relationship the System to Psychological Measurement

he number of

Major employers of Graduates

ATEX Co., Ltd.

AXAS Co., Ltd.

Broadcasting System of Niigata Inc.

Nuraki Co., Ltd.

○ KYOCERA Communication Systems Co., Ltd.

- OLOREM IPSUM Co. Ltd.
- MATSUDA SANGYO Co.,Ltd.
- Nihon Software Co., Ltd.
- N.S. Computer Service Co., Ltd.
- Recruit Hodlings Co., Ltd.

Writer: Masaya MATSUSHITA, Infotmation Science and Control Engineering (National Institute of Techonology, Hakodate Collage)

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教員名





Strategic, Technology and Manufacturing Management Laboratory

Associate Professor / Nobutaka SUZUKI

- We aim to clarify the mechanisms of management.
- SUZUKI Sensei! I really want to study management.
- The reseach isn't over until the moment you give up.

Associate Professor / Nobutaka SUZUKI

Dr. Suzuki studies the field such as management strategy, technology management, manufacturing management. He often goes to companies for survey, but he makes time for students no matter how busy and always give accurate comments to our reseach.



Research Content

Developing new profitable markets in emerging countries. Developing and selling new product for profit. Improving productivity by kaizen in the production site. We study such themes in our laboratory. Dr. Suzuki has conducted empirical reseach on management sites in Japan and overseas. Each of our studenta also decides on management research themes of interest, examines prior research and conducts field surveys and statistical analysis through both sides of the real field and theory.



Laboratory Awards

A Day in the Lab

STUDY ACTIVITY: At seminar, students read books and papers on business science to learn theory and research methods. At the laboratory level, we have lecture by company or field survey at

laboratory level, we have lecture by company of new survey accompany once a month.

ATMOSPHERE: We get along well with each other, cooperating and consulting with each other to carry out their research.

ARTICLE: We take turns in writing an article "Global Business Report" (www.mk-group.co.jp/np/) at MK Shinbun.

INTERNSHIP: We had a fulfilling internship at Makino Milling Machine

Co., Ltd.

AWARD: This laboratory received an award from the university for its activities and measures against COVID-19.



Activities during Internship

Thesis Subjects

- ▶ (B) Changes in young consumers' behavior at the time of self-restraint
- (M) Management for industry-university collaboration reseach
- (M) The management of regional event marketing

Major employers of Graduates

he number of



- SoftBank Corp.
- UCHIDA TANKO CO., LTD.
- Hino Motors, Ltd.
- SPLIX CO.,LTD ALL NIPPON AIRWAYS CO., LTD.
- DOCOMO CS, Inc.
- O HOSHIZAKI KITAKANTO CO.LTD
- NIPPON SEIKI CO., Ltd.
- Nissan Motor Co., Ltd
- SEALS Co., Ltd

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Writer: MONDEN Taiki, Information and Management Systems Engineering (Hyogo Prefectural Miki Senior High School)

教員名

SUZUKI Nobutaka





management studies management strategy technology management manufacturing management



Knowledge Media Laboratory

Professor / Tessai HAYAMA

- Challenges of Technology Development to Support Knowledge Society
- One for All, All for One
- Engaging throughtfully, intuitively, and logically



Professor / Tessai HAYAMA

He is a researcher in the fields of Computer Science, which covers software development and technical application of computer, and Knowledge Science. He offers us the opportunity to engage in our research process and to put into practice the cumulative process through critical thinking, scientific evaluation, and so on. He gives us good advice when we ask him for advice.



Research Content

In our daily lives and work styles, we have to deal with things intellectually and collaboratively; e.g., choosing information we need from lots of uncertain information around us and receiving proper support from the others. In this lab, we have been studying on new information technologies, such as human inteface design, software design, and database design, to enhance human abilities and collaborative activities for the daily lives and work styles. With the achievement of our studies, we can design systems to implement collaboration and creativity support environments, enabling the users to concentrate on intellectual tasks.



e-Learning system with concept-map creation support

A Day in the Lab

This laboratory started 7 years ago as Knowledge Media Lab. The members of the laboratory are composed of 1 professor, 3 graduated students, 4 undergraduate students, and 1 foriegn student. We decide the own research themes discussing with the professor some times, and then study on the own themes at our own time. There are regular meetings in which we report the research progress every week. We can have lots of fun time to perform the own research and talk with the lab members. This laboratory is open to welcome any persons.



picture of our laboratory

Thesis Subjects

- ▶ (B) Classification of walking posture based on a single acceleration sensor using deep learning
- (M) Developing e-learning support system for video streaming with concept-map creation.
- (M) A Study on Interest Estimation of Passive Users in SNS

he number of

Major employers of Graduates

Mitsubishi Electric Co. Ltd

NTT TechnoCross Corporation

Sakeai (founded by the student)

NTT DATA HOKURIKU Corporation

DMM.com

Writer: Takumi HASEGAWA, Information and Management Systems Engineering (Niigata Prefectural Sanjo High School)

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教員名

HAYAMA Tessai



キーワード

Web Intelligence Human Activity Recognition Learning Support Systems Creativity Support Systems





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Safety Data Management Laboratory

Associate Professor / ZHANG Kun

- Data Management
- Safety Big Data Research
- Product Accident Data Analysis

Supervisor Associate Professor / ZHANG Kun

Dr. Zhang insists on putting her faith in research and is adept at generating innovative ideas. She is passionate about helping students and giving them personalized guidance on their research as well as their work. In addition, Dr. Zhang looks forward to bringing positive energy to all.



∧ech anic

Electrical

Managemen:

Materials

=

stem Safety Inn

Research Content

We are interested in the analysis and utilization of various data in the field of safety. For example, we can extract keywords and lexical relationships from redundant descriptive text in product accident databases. We provide product designers and market surveillance departments with useful information obtained by building domain knowledge ontology models.



DIKW Model

A Day in the Lab

Every Wednesday is seminar day for all students. The seminar consists of two sessions: Research progress report session and English free exchange session.In the seminar, the teachers are always kind and helpful, and it is easy to communicate with them.



Seminar Day

Thesis Subjects

- ▶ (B) A survey of the current state of open data in Japan and other countries.
- (B) Designing a playground equipment accident database using neo4j.
- (M) An Analysis and Visualization of Accident Data of Elderlies Using Graph Database

The number of PhD Graduates

Major employers of Graduates

○ 株式会社フジ機工 小千谷工場

🗘 森塾 長岡

84

Writer: FENG Xiaodong, Infotmation Science and Control Engineering (Nagaoka University of Technology)

教員名

ZHANG Kun





ontology data science Product data data management













Intelligent Informatics Laboratory

Assosiate Professer / Tomohiro SHIRAKAWA

- Research to create synergy between "Science" and "Informatics"
- Develop useful services through research!
- Immerse yourself in research in a fulfilling environment!

Assosiate Professer / Tomohiro SHIRAKAWA

Prof. Shirakawa has wide range of knowledge, for example, Intelligence Infomatics, Life and Human Science, etc. He is always active and encourages students.



Research Content

In Intelligent Informatics Laboratory, we conduct researches with the following two strategies.

1) apply knowledge of Life and Human Science to Informatics studies.

2) apply technique of Informatics to solve the problems in Life and Human Science.

For example, we conduct a study of applying human cognitive bias to machine learning to improve the efficiency of it (strategy 1), and a study of SNS analysis using original sentiment analysis method (strategy 2). We are also working on the question "What is intelligence?" in the interdisciplinary studies with the strategies 1 and 2.





PC and device in our laboratory

A Day in the Lab

In our laboratory, a general meeting is held once a week to report progresses of research. In the meeting, the students set weekly goal, and the supervisor and the students evaluate the degree of achievement of the previous week. There is no core time in our laboratory. Our laboratory is newly established laboratory, but we can do research without problems because our lab environment is fulfilling. For the undergraduate students in our laboratory, the final goal before graduation is to present the achievement of our study at an academic conference such as The Society of Instrument and Control Engineers,



View of our laboratory

Thesis Subjects

No data due to newly established laboratory



Major employers of Graduates

No data due to newly established laboratory

he number of

Writer: Yuya YAGASHIRA, Information and Management Systems Engineering (national Institute of Technology, Kure College)

Intelligent Informatics Life, Health, Medical Informatics Human Science Biophysics

教員名

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