

List of research topics for NII International Internship Program 2022 1st Call

No.	Research Area	Title of the Research	Website	Name of supervisor	Title of the supervisor	Requirements for Applicants: Master's / Ph.D. Student	Total Number of Acceptance per Supervisor	Duration : 2-6months (less than 180days)	Comments
1. Principles of Informatics Research Division									
P00201	Intelligent Robotics	Human-Robot Interaction in Virtual Reality	http://www.iir.nii.ac.jp/lab/index-e/	Tetsunari Inamura	Associate Professor	Master's or PhD students	4	from 4 to 6 months	Students who have skill on ROS programming for robot control is required. Students who have skill on development of VR application based on Unity is welcomed.
P00202	Cognitive Science and Virtual Reality	Self coaching system using Human Digital Twin	http://www.iir.nii.ac.jp/lab/index-e/	Tetsunari Inamura	Associate Professor	Master's or PhD students		from 4 to 6 months	Students who have skill on development of VR application based on Unity is required.
P00203	Psychological Informatics	AI system for improving users' self-efficacy	http://www.iir.nii.ac.jp/lab/index-e/	Tetsunari Inamura	Associate Professor	Master's or PhD students		from 4 to 6 months	Students who have skill and knowledge in psychology or physiology are welcomed.
P01001	AI and Law	legal reasoning		Ken Satoh	Professor	PhD students	3	3 month	only after December 2022
P01002	AI and Law	norm compliance mechanism		Ken Satoh	Professor	PhD students		3 month	only after December 2022
P01003	AI and Law	online dispute resolution		Ken Satoh	Professor	PhD students		3 month	only after December 2022
P01004	AI and Law	legal language processing		Ken Satoh	Professor	PhD students		3 month	only after December 2022
P01005	AI and Law	legal information extraction		Ken Satoh	Professor	PhD students		3 month	only after December 2022
P01201	Artificial Intelligence / Web Informatics	Semantic Web / Linked Open Data / Knowledge Graph	http://lod.ac http://www-kasm.nii.ac.jp/	Hideaki Takeda	Professor	Master's or PhD students	2	3-6months	
P01202	Artificial Intelligence	Ethics on Artificial Intelligence		Hideaki Takeda	Professor	Master's or PhD students		3-6months	
P02001	Theoretical Computer Science / Data Mining	Average Sensitivity of Optimization Problems	https://arxiv.org/abs/1904.03248 https://arxiv.org/abs/2111.02657	Yuichi Yoshida	Professor	PhD students	2	3-6months	
P02002	Theoretical Computer Science / Data Mining	Spectral Theory for Directed Graphs and Hypergraphs	https://arxiv.org/abs/2106.02353 https://arxiv.org/abs/2006.08302	Yuichi Yoshida	Professor	PhD students		3-6months	
P02003	Theoretical Computer Science	Sublinear-time Algorithms		Yuichi Yoshida	Professor	PhD students		3-6months	

2. Information Systems Architecture Science Research Division

A00301	Machine Learning, Deep Learning, Software Engineering, Testing and Debugging	Risk-Aware Debugging Techniques for Deep Neural Networks	http://research.nii.ac.jp/~f-ishikawa/en/lab.html	Fuyuki Ishikawa	Associate Professor	Master's or PhD students	3	2-6 months	
A00302	Software Engineering, Testing and Debugging, Cyber-Physical Systems, AI Systems	Smart Testing and Debugging for Cyber-Physical and Intelligent Systems	http://research.nii.ac.jp/~f-ishikawa/en/lab.html	Fuyuki Ishikawa	Associate Professor	Master's or PhD students		2-6 months	
A00601	Wireless and Mobile Networks, Sensing, Signal Processing, Machine Learning	AI and Machine Learning-based wireless networks for Beyond 5G and 6G	http://research.nii.ac.jp/~megkaneko/	Megumi Kaneko	Associate Professor	Master's or PhD students	3	4-6 months	Required programming skills: Matlab. Basic knowledge wireless/digital communications and signal processing is required.
A00602	Wireless and Mobile Networks, Sensing, Signal Processing, Machine Learning	Energy efficiency optimization and energy harvesting for IoT massive connectivity and sensing	http://research.nii.ac.jp/~megkaneko/	Megumi Kaneko	Associate Professor	Master's or PhD students		4-6 months	Required programming skills: Matlab. Basic knowledge wireless/digital communications and signal processing is required.
A00603	Wireless and Mobile Networks, Sensing, Signal Processing, Machine Learning	Integrated terrestrial and spatial wireless communications for Beyond 5G and 6G	http://research.nii.ac.jp/~megkaneko/	Megumi Kaneko	Associate Professor	Master's or PhD students		4-6 months	Required programming skills: Matlab. Basic knowledge wireless/digital communications and signal processing is required.
A00604	Wireless and Mobile Networks, Sensing, Signal Processing, Machine Learning	Intelligent Reflective Surfaces (IRS) technology and wireless access at TeraHertz band for 6G	http://research.nii.ac.jp/~megkaneko/	Megumi Kaneko	Associate Professor	Master's or PhD students		4-6 months	Required programming skills: Matlab. Basic knowledge wireless/digital communications and signal processing is required.
A00801	Wireless communication	Resource management in beyond 5G and 6G wireless networks	https://klab.nii.ac.jp	Yusheng Ji	Professor	Master's or PhD students	3	3-6 months	Understanding of wireless communications and basic knowledge on optimization are required.
A00802	Networking	AI/ML for networking	https://klab.nii.ac.jp	Yusheng Ji	Professor	Master's or PhD students		3-6 months	Experience in machine learning (deep learning, reinforcement learning, or federated learning etc.) is preferred.
A00803	IoT	Wireless sensing	https://klab.nii.ac.jp	Yusheng Ji	Professor	Master's or PhD students		3-6 months	Knowledge and experience on RF sensing is required.
A01201	Programming Languages	Verification and Synthesis of Programs with Computational Effects and Probability	https://researchmap.jp/t-sekiym?lang=en https://link.springer.com/chapter/10.1007/978-3-030-17184-1_13	Taro Sekiyama	Assistant Professor	Master's or PhD students	3	4-6 months	
A01202	Program Verification	Combining Static and Dynamic Verification	https://researchmap.jp/t-sekiym?lang=en	Taro Sekiyama	Assistant Professor	Master's or PhD students		4-6 months	
A01203	Machine Learning & Program Verification	Bridging Machine Learning and Program Verification	https://researchmap.jp/t-sekiym?lang=en https://link.springer.com/chapter/10.1007/978-3-030-88806-0_12	Taro Sekiyama	Assistant Professor	Master's or PhD students		4-6 months	
A01701	Theoretical Computer Science	Categorical Foundation of Model Checking	https://group-mmm.org/~ichiro/	Ichiro Hasuo	Professor	Master's or PhD students	2	max. 6 months	<ul style="list-style-type: none"> - Fixed-point specifications (such as in LTL and modal μ-calculus) have been conventionally studied in terms of finitary and combinatory structures (automata, games, etc.). These observations are recently being transferred to more abstract settings, opening up algorithms and proof methods for new application domains (esp. probabilistic, metric, etc.). There are a number of research questions waiting to be answered, both theoretical and algorithmic. - References: [Komorida, Katsumata, Hu, Klin, Hasuo, LICS'19], [Komorida, Katsumata, Kupke, Rot, Hasuo, LICS'21], [Kori, Hasuo, Katsumata, CONCUR'21] - Desired: familiarity with mathematical and abstract reasoning used in logic, lattice theory and (possibly) category theory

A01702	Theoretical Computer Science	Combining local and global propagation in quantitative model checking	https://group-mmm.org/~ichiro/	Ichiro Hasuo	Professor	Master's or PhD students		max. 6 months	<p>- We are especially interested in value iteration, a family of approximate algorithms for quantitative model checking. Usual algorithms with only local propagation face certain challenges, and we have recently shown that those challenges are efficiently mitigated by mixing a right choice of global propagation. The goal is to push the idea further, to other problems and to formalization of theoretical foundations</p> <p>- Reference: [Phalakarn, Takisaka, Haas, Hasuo, CAV'20]</p> <p>- Desired: familiarity with model checking (see e.g. [Baier & Katoen '08]), logic and automata. Familiarity with graph-theoretic algorithms is appreciated, too</p>
A01703	Theoretical Computer Science	Logical guidance in optimization metaheuristics	https://group-mmm.org/~ichiro/	Ichiro Hasuo	Professor	Master's or PhD students		max. 6 months	<p>- Many real-world optimization problems have inherent logical and discrete structures, but many optimization metaheuristics (stochastic optimization, hill-climbing, evolutionary computation, etc.) do not make explicit use of such structures. We have used hierarchical optimization frameworks where the upper logical layer guides the lower metaheuristics layer for efficiency and explainability. The goal is to push the idea further in other applications and theoretical foundations</p> <p>- References: [Zhang, Hasuo, Arcaini, CAV'19], [Zhang, Ernst, Sedwards, Arcaini, Hasuo, EMSOFT'18]</p> <p>- Desired: familiarity with, or eagerness to learn, 1) formal logic, 2) optimization metaheuristics, 3) statistical machine learning</p>
A01704	Theoretical Computer Science	Logical safety for automated driving	https://group-mmm.org/~ichiro/	Ichiro Hasuo	Professor	Master's or PhD students		max. 6 months	<p>- Responsibility-sensitive safety (RSS) is a recently proposed methodology for devising mathematically-guaranteed safety rules for automated driving. The candidate will work on its logical foundations and its application to various driving scenarios. The work is much like interactive theorem proving, but with unique theoretical challenges (e.g. continuous dynamics) and a hot application (automated driving).</p> <p>- References: [Shalev-Shwartz, Shammah, Shashua, arXiv'17] (our goal is to make the theory logically well-grounded)</p> <p>- Desired: familiarity with formal logic and interactive theorem proving, interest in bringing theory to practice</p>
A01801	Computer network	Network security measurement and analysis	http://www.fukuda-lab.org/internship	Kensuke Fukuda	Associate Professor	Master's or PhD students	3	5-6 months	Solid programming (python or C++) and machine learning skills
A01802	Computer network	Network config/log mining	http://www.fukuda-lab.org/internship	Kensuke Fukuda	Associate Professor	Master's or PhD students		5-6 months	Solid programming (python) and machine learning skills
A01803	Computer network	Web privacy measurement	http://www.fukuda-lab.org/internship	Kensuke Fukuda	Associate Professor	Master's or PhD students		5-6 months	Solid programming skill (python or javascript)
A01804	Computer network	IoT traffic anomaly detection	http://www.fukuda-lab.org/internship	Kensuke Fukuda	Associate Professor	Master's or PhD students		5-6 months	Solid programming and machine learning skills

3. Digital Content and Media Sciences Research Division

K00101	Text Media	Language Models and their applications to assist human activities	http://www-al.nii.ac.jp	Akiko Aizawa	Professor	Master's or PhD students	3	3-6 months (6 month is preferable)	
K00102	Text Media	Deep analysis of scientific papers	http://www-al.nii.ac.jp	Akiko Aizawa	Professor	Master's or PhD students		3-6 months (6 month is preferable)	
K00103	Text Media	Mathematical language processing	http://www-al.nii.ac.jp	Akiko Aizawa	Professor	Master's or PhD students		3-6 months (6 month is preferable)	
K00401	Data Science	Deep Learning-based Water Crystals Classification	http://research.nii.ac.jp/~andres/official/intern2022_ON_SITE_call_1.html	Frederic ANDRES	Associate Professor	Master's or PhD students	3	180 days	cooperation with the Emoto research Laboratory
K00402	Applied mathematics	Sparse Low Rank (SLR) Processing	http://research.nii.ac.jp/~andres/official/intern2022_ON_SITE_call_2.html	Frederic ANDRES	Associate Professor	Master's or PhD students		180 days	cooperation with Bishop Heber College (India)
K00403	Data Science	Data Science on Water Resistivity	http://research.nii.ac.jp/~andres/official/intern2022_ON_SITE_call_3.html	Frederic ANDRES	Associate Professor	Master's or PhD students		180 days	Cooperation with PUC (Campinas, Brazil)
K00501	3-D computer vision	Large-scale indoor, outdoor scene reconstruction and understanding for VR/AR using RGB(D) and/or 360 imaging sensors	https://satoshi-kehata.github.io/	Satoshi Ikehata	Assistant Professor	Master's or PhD students	2	3-6 months	Topics may include various 3-D vision tasks related to VR/AR such as large scale scene reconstruction, scene parsing, object detection, novel-view synthesis (e.g., NeRF) and so on.
K00502	3-D computer vision	Shape, material and lighting from images under different lighting conditions (e.g., photometric stereo)	https://satoshi-kehata.github.io/	Satoshi Ikehata	Assistant Professor	Master's or PhD students		3-6 months	This project mainly focuses on exploring the possibilities of shading information for 3-D computer vision tasks based on physics-based principles.
K01001	Digital Humanities	Machine learning for image processing (esp. character recognition), geographic information, linked data and metadata management for cultural heritage	http://agora.ex.nii.ac.jp/~kitamoto/education/internship/	Asanobu Kitamoto	Professor	Master's or PhD students	4	3-6 months	A student with programming skills and interests in real problems is preferred.
K01002	Earth Environmental Informatics	Big data analytics (esp. image processing, remote sensing and machine learning) for societal problems such as environment and sustainability	http://agora.ex.nii.ac.jp/~kitamoto/education/internship/	Asanobu Kitamoto	Professor	Master's or PhD students		3-6 months	A student with programming skills and interests in real problems is preferred.
K01003	Crisis Informatics	Big data analytics (esp. image processing, natural language processing, and machine learning) for natural disasters and crisis	http://agora.ex.nii.ac.jp/~kitamoto/education/internship/	Asanobu Kitamoto	Professor	Master's or PhD students		3-6 months	A student with programming skills and interests in real problems is preferred.
K01004	Open Science	Research on a new trend of science, such as open data, data citation, citizen science, and open innovation	http://agora.ex.nii.ac.jp/~kitamoto/education/internship/	Asanobu Kitamoto	Professor	Master's or PhD students		3-6 months	A student with programming skills and interests in real problems is preferred.
K01401	content-based image and video analysis	video and image search (esp. TRECVID AVS task. see: https://trecvid.nist.gov/)	http://www.satoh-lab.nii.ac.jp/	Shin'ichi Satoh	Professor	Master's or PhD students	3	more than 90 days	
K01402	content-based image and video analysis	Automatic question answering about videos (esp. TRECVID Deep Video Understanding (DVU). see: https://trecvid.nist.gov/)	http://www.satoh-lab.nii.ac.jp/	Shin'ichi Satoh	Professor	Master's or PhD students		more than 90 days	
K01403	content-based image and video analysis	Video/image captioning (esp. TRECVID Video to Text (VTT) task. see: https://trecvid.nist.gov/)	http://www.satoh-lab.nii.ac.jp/	Shin'ichi Satoh	Professor	Master's or PhD students		more than 90 days	
K01404	content-based image and video analysis	Disaster Scene Analysis (esp. TRECVID Disaster Scene Description and Indexing (DSDI): see https://trecvid.nist.gov/)	http://www.satoh-lab.nii.ac.jp/	Shin'ichi Satoh	Professor	Master's or PhD students		more than 90 days	
K01405	content-based image and video analysis	Landmark image retrieval, e.g., Google Landmark Image Retrieval https://www.kaggle.com/c/landmark-retrieval-2020	http://www.satoh-lab.nii.ac.jp/	Shin'ichi Satoh	Professor	Master's or PhD students		more than 90 days	

K01601	Computer Vision	One of the following topics: (1) 3D vision, (2) Human activity recognition, (3) Gaze sensing and navigation, (4) Object detection and segmentation from video using deep learning, and (5) Image/video generation using deep learning	http://www.dgcv.nii.ac.jp	Akihiro Sugimoto	Professor	Master's or PhD students	5	Up to 6 months (at least 3 months; a longer period is better)	Rigorous background on mathematics is required. Strong programming skills on image processing and computer vision are also required. In the case of Master course students, highly motivated students who can stay for 6 months are preferable. Students who are willing to pursue PhD at NII are preferable as well. Potential applicants should send your CV and research interests/proposals directly to Prof. Sugimoto before your application.
K01602	Digital Geometry	(1) Discretization model of geometric shape, (2) Discrete shape fitting to noisy integer points.	http://www.dgcv.nii.ac.jp	Akihiro Sugimoto	Professor	Master's or PhD students		Up to 6 months (at least 3 months)	Rigorous background on mathematics as well as computer vision is required. In particular, sufficient knowledge of linear algebra, graph theory and number theory are important requirements. Programming skills on image processing or computer vision are also required. Potential applicants should send your CV and research interests/proposals directly to Prof. Sugimoto before your application.
K02001	Drone Traffic Management, Risk Simulation, Token Economy (Web3)	Research and development of algorithms and designs for Unmanned Aircraft Systems ("drone") Traffic Management (UTM)	http://research.nii.ac.jp/~prendinger/papers/FY2022(1)_Topics.html	Helmut Prendinger	Professor	Master's or PhD students	6	4 - 6 months	We are participating in a national UTM project, where we develop a "digital twin" of areas in Japan to simulate and study realistic drone traffic. We are also interested in market design based on blockchain and token economy (Web3).
K02002	Deep Learning	Object (person) and human action recognition from the drone perspective	http://research.nii.ac.jp/~prendinger/papers/FY2022(1)_Topics.html	Helmut Prendinger	Professor	Master's or PhD students		4 - 6 months	We are participating in national projects with the Advanced Robotics Foundation and the Central Research Institute of Electric Power Industry.
K02003	Deep Learning	Bitcoin market prediction	http://research.nii.ac.jp/~prendinger/papers/FY2022(1)_Topics.html	Helmut Prendinger	Professor	Master's or PhD students		4 - 6 months	This exploratory project uses publicly available sources.
K02301	Speech processing	Differentiable digital signal processing with applications to speech and music audio generation	Relevant but not limited to [1] Engel, J., Hantrakul, L., Gu, C. & Roberts, A. DDSP: Differentiable Digital Signal Processing. in Proc. ICLR (2020). [2] neural waveshaping synthesis https://benhayes.net/projects/nws/	Junichi Yamagishi	Professor	PhD students	4	4-6 months	The successful candidate should be a PhD student in speech processing, computer science, or a related discipline. He or she should have strong programming skills. Familiarity with DNN tools (e.g., Pytorch) and speech tools are preferable. Supervision teams include Dr. Xin Wang
K02302	Speech processing	Privacy preserving processing for speech signals including automatic generation of speaker-anonymized synthetic speech	Relevant but not limited to [1] https://www.voiceprivacychallenge.org . [2] Tomashenko, N. et al. The VoicePrivacy 2020 Challenge: Results and findings. Comput. Speech Lang. 101362 (2022) doi:10.1016/j.csl.2022.101362	Junichi Yamagishi	Professor	PhD students		4-6 months	The successful candidate should be a PhD student in speech processing, computer science, or a related discipline. He or she should have strong programming skills. Familiarity with DNN tools (e.g., Pytorch) and speech tools are preferable. Supervision teams include Dr. Xin Wang and Dr. Xiaoxiao Miao
K02303	Speech processing	Generalizable and robust fake speech detection	Relevant but not limited to [1] https://www.asvspoof.org [2] Wang, X. & Yamagishi, J. A Practical Guide to Logical Access Voice Presentation Attack Detection. https://arxiv.org/abs/2201.03321 [3] Investigating self-supervised front ends for speech spoofing countermeasures https://arxiv.org/abs/2111.07725	Junichi Yamagishi	Professor	PhD students		4-6 months	The successful candidate should be a PhD student in speech processing, computer science, or a related discipline. He or she should have strong programming skills. Familiarity with DNN tools (e.g., Pytorch) and speech tools are preferable. Supervision teams include Dr. Xin Wang

K02304	Speech processing	Unified frameworks of speaker/language recognition and speech synthesis	Relevant but not limited to [1] Cross-Lingual Text-to-Speech Using Multi-Task Learning and Speaker Classifier Joint Training	Junichi Yamagishi	Professor	PhD students		4-6 months	The successful candidate should be a PhD student in speech processing, computer science, or a related discipline. He or she should have strong programming skills. Familiarity with DNN tools (e.g., Pytorch) and speech tools are preferable. Supervision teams include Dr. Xiaoxiao Miao
K02305	Speech processing	Data-efficient end-to-end speech synthesis	Relevant papers include, but are not limited to: [1] Cheng-I Jeff Lai, Erica Cooper, Yang Zhang, Shiyu Chang, Kaizhi Qian, Yi-Lun Liao, Yung-Sung Chuang, Alexander H. Liu, Junichi Yamagishi, David Cox, James Glass, "On the Interplay Between Sparsity, Naturalness, Intelligibility, and Prosody in Speech Synthesis," ICASSP 2022, and Erica Cooper, Cheng-I Lai, Yusuke Yasuda, Junichi Yamagishi, "Can Speaker Augmentation Improve Multi-Speaker End-to-End TTS?" Interspeech 2020.	Junichi Yamagishi	Professor	PhD students		4-6 months	The successful candidate should be a PhD student in speech processing, computer science, engineering, linguistics, mathematics, or a related discipline. He or she should have strong programming skills. Familiarity with DNN tools and speech tools are preferable. Supervision teams include Dr. Erica Cooper
K02306	Music processing	Expressive multi-instrument musical performance generation using deep learning	Relevant papers include, but are not limited to: [1] Xuan Shi, Erica Cooper, Junichi Yamagishi, "Use of speaker recognition approaches for learning and evaluating embedding representations of musical instrument sounds," IEEE/ACM Trans. ASLP, Jan 2022, and Erica Cooper, Xin Wang, Junichi Yamagishi, "Text-to-Speech Synthesis Techniques for MIDI-to-Audio Synthesis," SSW 2021.	Junichi Yamagishi	Professor	PhD students		4-6 months	The successful candidate should be a PhD student in speech or music signal processing, computer science, or a related discipline. He or she should have strong programming skills and experience with speech and audio processing and/or machine learning. • Familiarity with DNN tools and speech tools are preferable. Supervision teams include Dr. Erica Cooper
K02307	Natural language processing	Resolving artifacts, biases, and shortcuts in NLP datasets	Relevant papers include, but are not limited to: [1] Geirhos et al., "Shortcut learning in deep neural networks", Nature Machine Intelligence, 2020.	Junichi Yamagishi	Professor	PhD students		4-6 months	The successful candidate should be a PhD student in natural language processing, computer science, engineering, linguistics, mathematics, or a related discipline. He or she should have strong programming skills. Familiarity with DNN tools and speech tools are preferable. Supervision teams include Dr. Canasai Krueangkrai
K02308	Natural language processing	Cross-lingual representation learning	Relevant papers include, but are not limited to: [1] Conneau et al., "Unsupervised cross-lingual representation learning at scale", ACL, 2020.	Junichi Yamagishi	Professor	PhD students		4-6 months	The successful candidate should be a PhD student in natural language processing, computer science, engineering, linguistics, mathematics, or a related discipline. He or she should have strong programming skills. Familiarity with DNN tools and speech tools are preferable. Supervision teams include Dr. Canasai Krueangkrai
K02601	Multimedia Data Mining and Analysis	Multimodal deep learning and pre-training models for cross-modal retrieval between audio-video, lyrics-audio, and image-text, multimedia content recommendation	http://research.nii.ac.jp/~yiyu/	Yi Yu	Assistant Professor	Master's or PhD students	4	3-6 months	
K02602	Artificial Intelligence and Music	Deep generative models for lyrics-to-melody generation, melody-to-lyrics generation, singing voice synthesis	https://github.com/yy1lab/Lyrics-Conditioned-Neural-Melody-Generation	Yi Yu	Assistant Professor	Master's or PhD students		3-6 months	

4. Information and Society Research Division

J00501	Interactive Information Retrieval	Understanding and Modeling User Behaviour during Complex Search Task	The current project page has not been set up, but the previous related project page is available at; http://cres.ipn.org/?FrontPage	Noriko Kando	Professor	Either Master and PhD students are fine, but priority will be given to PhD student	4	6 months	The grand target of the project is to propose a mechanism to support the users conducting complex/exploratory search tasks. As a step toward the target, several internship research tasks are prepared as following, but not limited to: 1) propose or enhance a method to assess the outcomes of the complex/exploratory search so called "search as learning" process, 2) investigate the affects of the user search behaviour in terms of dwell time, link depth, search trail, engagement, perceived task difficulty, cognitive task complexity on the learning outcome, 3) investigate the relationship between user's attributes such as domain expertise, task familiarity, time constraint, etc. and the search behaviour and the learning outcomes, 4) investigate the approach towards longitudinal learning effects, 5) building and/or enhancing the tools usable for the above mentioned 1) -4). Any other topic related to this research direction shall be considered.
J00502	Interactive Information Retrieval and Human Computer Interaction	Research and Developing a lifelog camera- or a sensor- based method to enhance the interaction between in-building museum visitor and artifacts displayed at Museum. Use iPadPro 2018.	Enhance a functionality of detailed interaction between visitor and exhibits using lifelog-cameras or any other light-weight sensing devices.	Noriko Kando	Professor	Either Master and PhD students		6 months	Enhance the interaction functionality of the current prototype system of an interactive exploratory user guide using iPadPro. For the sensors, the current prototype system using iBeacons, and this project will investigate and try tother mechanisms to sense and identify user's behaviour in the museum. One of the research directions we have just started to investigate the approach for better museum experience for disabled person
J00503	Human computer Interaction, Design	Design method of the postcard which containing the images of the artifacts that the visitor observed in the museum visit, based on each visitor's behaviour in the museum	To enhance the prototype Interactive user guide system for Museum, this project conducts user experiment to obtain the feedback to improve the design and the effective and attractive layout of the images of the museum objects for a postcard for each visitor, based on each visitor's behaviour in the museum visit. Especially, for this year, the project especially interested in investigating the effect of the Museum experience in a longitudinal desing.	Noriko Kando	Professor	Either Master and PhD students		6 months	Related to the above-mentioned #2 project.
J00504	Argument Mining / Argument Summarization / Argument Structure Analysis	(1) Argument Mining / Argument Summarization / Argument Structure Analysis, or (2) Sentiment Analysis	https://polinfo.github.io/	Noriko Kando	Professor	Either Master and PhD students		6 months	Regarding a challenge on political information analysis in the NTCIR's QA Lab shared task series and JSPS Funded Project on Stance Analysis, this project aims 1) survey of the existing literature on argument analysis (mining, summarization, structure analysis), 2) propose system(s) for automatic argument analysis / mining / summarization using either a) NTCIR-15/-16 Polinfo Corpus (Japanese), or b) any other corpus in English. For (2) Sentiment analysis
J00505	Citation analysis	Citation analysis of the "Information Retrieval" domain		Noriko Kando	Professor	Either Master and PhD students		6 months	To analyse the trend and structure of research area of Information Retrieval (IR) and Interactive Information Retrieval (IIR) using various citation analysis methods including co-citation mapping. Compare the analysis published in 1991*, analyse how the domain had been developed over the three decades [NB: * Noriko Kando et al (1991) "Structure of Information Retrieval Research: Tracking the Specialties and Development of Research Using Co-citation Maps and Citation Diagrams"]
J00801	Educational Data Mining, Knowledge Tracing, Learning Analytics	Personalized learning and cognitive diagnostic modelling		Yuan Sun	Associate Professor	PhD student	1	3-6 months	