List of research topics for NII International Internship Program 2023 1st Call

No.	Research Area	Title of the Research	Website	Name of supervisor	Title of the supervisor	Requirements for Applicants: Master / Ph.D. Student	Total Number of Acceptance per Supervisor	Duration : 2-6months (less than 180days)	Comments
1. Principles of Informatics Research Division									
P00301	Knowledge Representation and Reasoning	Integration of Knowledge Representation and Machine Learning	http://research.nii.ac.jp/il/	Katsumi Inoue	Professor	Master/Ph.D.	2	3 - 6 months	Knowledge in KR&R (e.g., logic programming, SAT, ASP, abduction, belief change, commonsense reasoning) as well as machine learning (e.g., neurosymbolic AI, inductive inference, representation learning) are advantageous to tackle this subject. Experience in algebraic computation is useful too. Contact Prof. Inoue in advance.
P00302	Knowledge Representation and Reasoning	Discovery, Inference and Learning about Dynamic Systems	http://research.nii.ac.jp/il/	Katsumi Inoue	Professor	Master/Ph.D.	2	3 - 6 months	Basic knowledge of symbolic AI and machine learning is required. Interests and experiences in topics such as Boolean networks, cellular automata, model checking, planning and dynamical systems are welcome. Contact Prof. Inoue in advance.
P01001	AI and Law	Norm Compliance Mechanism		Ken Satoh	Professor	Ph.D.	3	2 - 3 months	
P01002	AI and Law	Legal Reasoning		Ken Satoh	Professor	Ph.D.	3	2 - 3 months	
P01003	AI and Law	Legal Natural Language Processing		Ken Satoh	Professor	Ph.D.	3	2 - 3 months	
P01101	Machine learning	Geometric analysis of machine learning and its relationship to symbolic reasoning	https://mahito.nii.ac.jp	Mahito Sugiyama	Associate Professor	Ph.D.	2	3 - 6 months	
P01201	Artificial Intelligence / Web Informatics	Semantic Web / Linked Data / Linked Open Data	http://lod.ac http://www-kasm.nii.ac.jp/~takeda	Hideaki Takeda	Professor	Master/Ph.D.	3	3 - 6 months	
P01202	Artificial Intelligence	Artificial Social Intelligence: building intelligence systems with social knowledge and social interaction	http://www-kasm.nii.ac.jp/~takeda	Hideaki Takeda	Professor	Master/Ph.D.	3	3 - 6 months	
P01301	software verification	separation logic	http://research.nii.ac.jp/~tatsuta/index-e.html	Makoto Tatsuta	Professor	Master/Ph.D.	2	2 - 6 months	
P02001	Theoretical Computer Science Data Mining	Spectral theory for directed graphs, hypergraphs, and submodular transformations.	https://arxiv.org/abs/2106.02353 https://dl.acm.org/doi/abs/10.1145/3394486.3403248 https://arxiv.org/abs/1708.08781	Yuichi Yoshida	Professor	Ph.D.	2	2 - 6 months	
P02002	Theoretical Computer Science Machine Learning	Average sensitivity of optimization problems	https://arxiv.org/abs/1904.03248 https://arxiv.org/abs/2111.02657	Yuichi Yoshida	Professor	Ph.D.	2	2 - 6 months	
P02003	Theoretical Computer Science	Sublinear-time algorithms	https://arxiv.org/abs/2204.08404 https://arxiv.org/abs/2210.12601	Yuichi Yoshida	Professor	Ph.D.	2	2 - 6 months	
P02101	Computational Complexity Theory	Meta-complexity, average-case complexity, pseudorandomness, and the Minimum Circuit Size Problem	https://eccc.weizmann.ac.il/report/2022/119/ https://eccc.weizmann.ac.il/report/2021/058/	Shuichi Hirahara	Associate Professor	Master/Ph.D.	1	2 - 6 months	
P03401	Robotics	Development of humanoid robot		Taisuke Kobayashi	Assistant Professor	Master/Ph.D.	2	4 - 6 months	Design a part of humanoid hardware or develop a software for robot state estimation
P03402	Machine learning	World model for model-based reinforcement learning		Taisuke Kobayashi	Assistant Professor	Master/Ph.D.	2	4 - 6 months	Implement a novel world model for predicting future states on robot control
P03501	Quantum information	Making a general framework to explore large-scale quantum programs		Akihito Soeda	Associate Professor	Master/Ph.D.	2	2 - 6 months	
P03502	Quantum information	Making more accurate physical models to describe quantum information processing devices		Akihito Soeda	Associate Professor	Master/Ph.D.	2	2 - 6 months	

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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/Ph.D.	5	2 - 6 months	
A00302	Software Engineering, Cyber-Physical Systems, Testing and Debugging, Formal Methods	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/Ph.D.	5	2 - 6 months	
A00601	Wireless and Mobile Networks, Sensing, Signal Processing, Machine Learning	Energy-efficient edge AI-based wireless networks design for Beyond 5G	http://research.nii.ac.jp/~megkaneko/	Megumi Kaneko	Associate Professor	Master/Ph.D.	3	4 - 6 months	Required programming skills: Matlab, Python. Basic knowledge in wireless/digital communications and signal processing is required.
A00602	Wireless and Mobile Networks, Sensing, Signal Processing, Machine Learning	Joint wireless communications and sensing for IoT massive connectivity	http://research.nii.ac.jp/~megkaneko/	Megumi Kaneko	Associate Professor	Master/Ph.D.	3	4 - 6 months	Required programming skills: Matlab, Python. Basic knowledge in 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/Ph.D.	3	4 - 6 months	Required programming skills: Matlab, Python. Basic knowledge in wireless/digital communications and signal processing is required.
A00604	Wireless and Mobile Networks, Sensing, Signal Processing, Machine Learning	Exploiting TeraHertz bands for 6G wireless communications and sensing	http://research.nii.ac.jp/~megkaneko/	Megumi Kaneko	Associate Professor	Master/Ph.D.	3	4 - 6 months	Required programming skills: Matlab, Python. Basic knowledge in 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/Ph.D.	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/Ph.D.	3	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/Ph.D.	3	3 - 6 months	Knowledge and experience on RF sensing is required.
A01201	Programming Languages / Program Verification	Advanced Type Systems for Computational Effects	https://researchmap.jp/t-sekiym?lang=en https://dl.acm.org/doi/abs/10.1145/3571264	Taro Sekiyama	Assistant Professor	Master/Ph.D.	3	3 - 6 months	Computational effects are a key factor for effectful programming, being able to be implemented using, e.g., monads, control operators, and effect handlers. This research aims to develop advanced type systems, such as dependent type systems, for the effectful constructs.
A01202	Program Verification	Program Verification with Machine Learning	https://researchmap.jp/t-sekiym?lang=en https://arxiv.org/abs/2107.09766	Taro Sekiyama	Assistant Professor	Master/Ph.D.	3	2 - 6 months	This internship program aims to apply machine learning techniques, including reinforcement learning and text-processing methods, to speed up program verification process.
A01203	Programming Languages / Program Verification	Type-Based Temporal Verification and Its Automation	https://researchmap.jp/t-sekiym?lang=en https://dl.acm.org/doi/10.1145/3209108.3209204 https://dl.acm.org/doi/abs/10.1145/3571264	Taro Sekiyama	Assistant Professor	Master/Ph.D.	3	3 - 6 months	Temporal verification aims to verify safety and liveness temporal properties of programs, including how computation resources are used. This research aims to develop (1) advanced type systems for temporal verification in the presence of a variety of programming features such as recursion, references, and any other effects, and (2) procedures to automate the type-based temporal verification.

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A01701	Theoretical Computer Science	Categorical Foundation of Model Checking	https://group-mmm.org/~ichiro/	Ichiro Hasuo	Professor	Master/Ph.D.	2	2 - 6 months	## Fixed-point specifications (such as in LTL and modal \mu-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], [Kori, Urabe, Katsumata, Suenaga, Hasuo, CAV'22]□ ## Desired: familiarity with mathematical and abstract reasoning used in logic, lattice theory and (possibly) category theory ## Interested? Please first consult https://group-mmm.org/eratommsd/internship-students/ (don't write an email to me)
A01702	Theoretical Computer Science	Logical guidance in optimization metaheuristics	https://group-mmm.org/~ichiro/	Ichiro Hasuo	Professor	Master/Ph.D.	2	2 - 6 months	## 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. ## References: [Zhang, Hasuo, Arcaini, CAV'19], [Zhang, Ernst, Sedwards, Arcaini, Hasuo, EMSOFT'18] ## Desired: familiarity with, or eagerness to learn, 1) formal logic, 2) optimization metaheuristics, 3) statistical machine learning ## Interested? Please first consult https://group-mmm.org/eratommsd/internship-students/ (don't write an email to me)
A01703	Theoretical Computer Science	Logical safety for automated driving	https://group-mmm.org/~ichiro/	Ichiro Hasuo	Professor	Master/Ph.D.	2	2 - 6 months	## 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). ## References: [Hasuo, Eberhart, Haydon, et al., IEEE Trans. Intelligent Vehicles, '22 (available at arXiv)] [Shalev-Shwartz, Shammah, Shashua, arXiv'17] ## Desired: familiarity with formal logic and interactive theorem proving, passion in bringing theory to practice ## Interested? Please first consult https://group-mmm.org/eratommsd/internship-students/ (don't write an email to me)

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A01801	Computer network	Internet/IoT traffic anomaly detection	http://www.flab.nii.ac.jp/internship	Kensuke Fukuda	Associate Professor	Master	4	5 - 6 months	Solid programming and machine learning skills
A01802	Computer network	Network config mining / Network verification	http://www.flab.nii.ac.jp/internship	Kensuke Fukuda	Associate Professor	Master/Ph.D.	4	5 - 6 months	Solid programming (python) and machine learning skills
A01803	Computer network	Network security measurement and analysis	http://www.flab.nii.ac.jp/internship	Kensuke Fukuda	Associate Professor	Master/Ph.D.	4	5 - 6 months	Solid programming (python or C++) and machine learning skills
A01804	Computer network	Web privacy measurement	http://www.flab.nii.ac.jp/internship	Kensuke Fukuda	Associate Professor	Master/Ph.D.	4	5 - 6 months	Solid programming skill (python or javascript)

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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/Ph.D.	4	3 - 6 months	
K00102	Text Media	Deep analysis of scientific papers	http://www-al.nii.ac.jp	Akiko Aizawa	Professor	Master/Ph.D.	4	3 - 6 months	
K00103	Text Media	Mathematical language processing	http://www-al.nii.ac.jp	Akiko Aizawa	Professor	Master/Ph.D.	4	3 - 6 months	
K00401	Education	Ontology based Approach for compliance with student privacy protection requirements in Education	http://research.nii.ac.jp/~andres/official/intern2023_ON_SITE_topic_1.html	Frederic ANDRES	Associate Professor	Master/Ph.D.	3	6 months	Collaboration with ISO standardisation SC36 experts
K00402	Business intelligence	AI-driven customer intelligence	http://research.nii.ac.jp/~andres/official/intern2023_ON_SITE_topic_2.html	Frederic ANDRES	Associate Professor	Master/Ph.D.	3	6 months	Collaboration with the largest travel company in Japan
K00403	data science, water quality	Water Crystal classification benchmark	http://research.nii.ac.jp/~andres/official/intern2023_ON_SITE_topic_3.html	Frederic ANDRES	Associate Professor	Master/Ph.D.	3	6 months	collaboration with the Emoto research Lab
K00404	Data Science, Food Science	cooking recipes without border (CRWB) project	http://research.nii.ac.jp/~andres/official/intern2023_ON_SITE_topic_4.html	Frederic ANDRES	Associate Professor	Master/Ph.D.	3	6 months	collaboration with IEEE and ISO data science
K00405	Data science, education science	Affective Learning Monitoring Platform as a Service (ALMPaaS)	http://research.nii.ac.jp/~andres/official/intern2023_ON_SITE_topic_5.html	Frederic ANDRES	Associate Professor	Master/Ph.D.	3	6 months	collaboration with Darwin university and Cardiff University
K00501	3-D computer vision	Proffesional-grade image-based 3D reconstruction in the wild	https://satoshi-ikehata.github.io/	Satoshi Ikehata	Assistant Professor	Ph.D.	1	3 - 6 months	In this project, we explore a method for performing professional-grade (industry-available) image-based shape and reflectance recovery in the wild, primarily using the photometric stereo technique. Basic knowledge and interest in 3D computer vision and physics-based vision are desirable, as well as experience with Python coding and basic concepts of deep learning.
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/Ph.D.	4	3 - 6 months	
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/Ph.D.	4	3 - 6 months	
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/Ph.D.	4	3 - 6 months	
K01004	Open Science	Research on new trends in open 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/Ph.D.	4	3 - 6 months	
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/Ph.D.	5	3 - 6 months	
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/Ph.D.	5	3 - 6 months	
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/Ph.D.	5	3 - 6 months	
K01404	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/Ph.D.	5	3 - 6 months	

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K01601	computer vision	One of the following topics (but not limited to): (1) 3D vision, (2) Human activity recognition, (3) Gaze sensing and navigation, (4) Object detection and segmentation from video using deep learning, (5) Image/video generation using deep learning.	http://www.dgcv.nii.ac.jp	Akihiro Sugimoto	Professor	Master/Ph.D.	5	3 - 6 months	Longer duration 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 pursuit ph D 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, (3) Any proposed topic related with digital geometry.	http://www.dgcv.nii.ac.jp	Akihiro Sugimoto	Professor	Master/Ph.D.	5	3 - 6 months	Rigorous background on mathematics as well as computer vision is required. In particular, strong knowledge on linear algebra, graph theory, and number theory is 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.
K01701	Data Mining	recommender system	https://www.tlab.nii.ac.jp	Atsuhiro Takasu	Professor	Master/Ph.D.	4	4 - 6 months	
K01702	Data Mining	Tabular Data Recognition and Analysis	https://www.tlab.nii.ac.jp	Atsuhiro Takasu	Professor	Master/Ph.D.	4	4 - 6 months	
K01703	Data Mining	Sequence Data Mining	https://www.tlab.nii.ac.jp	Atsuhiro Takasu	Professor	Master/Ph.D.	4	4 - 6 months	
K02001	Deep Learning	High-Speed Object Detection and Tracking onboard a Drone	http://research.nii.ac.jp/~prendinger/papers/FY2023(1)_Topics.html	Helmut PRENDINGER	Professor	Master/Ph.D.	8	4 - 6 months	Longer stay is preferred for solid result.
K02002	Deep Learning/Machine Learning/Cointegration	Time Series Analysis for Bitcoin Market Prediction	http://research.nii.ac.jp/~prendinger/papers/FY2023(1)_Topics.html	Helmut PRENDINGER	Professor	Master/Ph.D.	8	4 - 6 months	Longer stay is preferred for solid result.
K02003	Deep Learning	Transformer-based Conditional Generative Models	http://research.nii.ac.jp/~prendinger/papers/FY2023(1)_Topics.html	Helmut PRENDINGER	Professor	Master/Ph.D.	8	4 - 6 months	Longer stay is preferred for solid result.
K02301	Speech processing	Differentiable digital signal processing with applications to speech audio generation	"Relevant but not limited to [1] WaveGrad https://arxiv.org/abs/2009.00713; [2] DiffWave https://arxiv.org/abs/2009.09761; [3] PriorGrad https://arxiv.org/abs/2106.06406; [4] BDDM https://arxiv.org/abs/2203.13508; [5] InferGrad https://arxiv.org/abs/2202.03751 [6] Grad-TTS https://arxiv.org/abs/2105.06337 [7] SaShiMi https://arxiv.org/abs/2202.09729 [8] SpecGrad https://arxiv.org/abs/2203.16749 [9] WaveFit https://arxiv.org/abs/2210.01029"	Junichi Yamagishi	Professor	Ph.D.	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 is preferable. Supervision teams include Dr. Xin Wang.
K02302	Speech processing	Audio Deepfake detection combining physiological, phonetic, and explainable deep learning techniques	"Relevant but not limited to [1] https://www.asvspoof.org [2] https://arxiv.org/abs/2201.03321 [3] https://www.usenix.org/system/files/sec22fall_blue.pdf [4] doi: 10.21437/Interspeech.2022-661 [5] Neural additive model: https://arxiv.org/abs/2004.13912"	Junichi Yamagishi	Professor	Ph.D.	4	6 months	The successful candidate should be a PhD student in speech processing, lingusitic, computer science, or a related discipline. He or she should have some programming skills. Familiarity with DNN tools (e.g., Pytorch) and speech tools is preferable. Supervision teams include Dr. Xin Wang.

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K02303	Speech processing	Automatic evaluation of speech and sound quality	Relevant papers include, but are not limited to: [1] Erica Cooper, Wen-Chin Huang, Tomoki Toda, Junichi Yamagishi, "Generalization Ability of MOS Prediction Networks" (ICASSP 2022) and [2] Wen-Chin Huang, Erica Cooper, Yu Tsao, Hsin-Min Wang, Tomoki Toda, Junichi Yamagishi, "The VoiceMOS Challenge 2022" (Interspeech 2022).	Junichi Yamagishi	Professor	Ph.D.	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.
K02304	Music processing	Expressive multi-instrument musical score-to-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, [2] Erica Cooper, Xin Wang, Junichi Yamagishi, "Text-to-Speech Synthesis Techniques for MIDI-to-Audio Synthesis," SSW 2021, and [3] Wu et al., ICLR 2022, "MIDI-DDSP: Detailed Control of Musical Performance via Hierarchical Modeling."	Junichi Yamagishi	Professor	Ph.D.	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.
K02305	Speech processing	Controllable language-independent speaker anonymization	Relevant but not limited to [1] https://www.voiceprivacychallenge.org, [2]Miao, X., Wang, X., Cooper, E., Yamagishi, J., Tomashenko, N. (2022) Language-Independent Speaker Anonymization Approach Using Self-Supervised Pre-Trained Models. Proc. The Speaker and Language Recognition Workshop (Odyssey 2022), 279-286, doi: 10.21437/Odyssey.2022-39	Junichi Yamagishi	Professor	Ph.D.	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.
K02306	Natural language processing	Cross-lingual few-shot learning	Relevant papers include, but are not limited to: [1] Lin et al., Few-shot Learning with Multilingual Generative Language Models, EMNLP-22.	Junichi Yamagishi	Professor	Ph.D.	4	6 months	The successful candidate should be a Ph.D. student in natural language processing, computer science/engineering, mathematics, or a related discipline and familiar with PyTorch. Supervision teams include Dr. Canasai Kruengkrai.
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/Ph.D.	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/Ph.D.	4	3 - 6 months	

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4. Information and Society Research Division									
J00301	Multimedia forensics	Generation and detection of fake facial videos	http://research.nii.ac.jp/~iechizen/official/research/research5-e.html	Isao Echizen	Professor	Master/Ph.D.	5	3 - 6 months	
J00302	Multimedia security	Generation and detection of adversarial examples	http://research.nii.ac.jp/~iechizen/official/research/research5-e.html	Isao Echizen	Professor	Master/Ph.D.	5	3 - 6 months	
J00303	Multimedia forensics	Image-based fact verification	http://research.nii.ac.jp/~iechizen/crest/en/research.html	Isao Echizen	Professor	Master/Ph.D.	5	3 - 6 months	

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Added									
As of April 17th, 2023									
3. Digital Content and Media Sciences Research Division									
K03401	Open Science	Development and application of open scholarly knowledge graphs for open science		Chifumi Nishioka	Assistant Professor	Master/Ph.D.	2	2 - 6 months	
K03402	Open Science	Analysis on current status of preprint publication and citation bias		Chifumi Nishioka	Assistant Professor	Master/Ph.D.	2	2 - 6 months	
K01301	Computer Vision and Computer Graphics	Computer Vision and Computer Graphics	http://research.nii.ac.jp/pbv/	Imari Sato	Professor	Master/Ph.D.	2	5 - 6 months	A basic knowledge of Image Analysis and/or Machine learning, and good programming skills are required.
As of April 25th, 2023									
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.jpn.org/?FrontPage	Noriko Kando	Professor	Master/Ph.D.	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 bahaviour 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 longtudinal 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	Human computer Interaction, Design	Interactive user guide app for Museum using iPad.	No project page is set up yet, but please refer the following to understand some aspect of the project; Y. Shoji et al., "Museum Experience into a Souvenir: Generating Memorable Postcards from Guide Device Behavior Log," 2021 ACM/IEEE Joint Conference on Digital Libraries (JCDL), Champaign, IL, USA, 2021, pp. 120-129, doi: 10.1109/JCDL52503.2021.00024.	Noriko Kando	Professor	Master/Ph.D.	4	6 months	To enhance the prototype Interactive user guide system for Museum, 1) propose a effective ranking and recommendation mechanism based on the relationship among the artifacts, user behaviour on the app and locational move in the museum, etc. 2) conducts user experiments of the app, 3) user experiments on the design of the post card automatically produced by the guide app based on the user's behaviour during a museum visit.