List of research topics for NII International Internship Program 2017 2nd 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									
1	Artificial Intelligence / Web Informatics	Semantic Web / Linked Data / Linked Open Data	http://lod.ac	Hideaki Takeda	Professor	Master's or PhD students	3	3-6months	
2	Artificial Intelligence / Web Informatics	Social Web / Social Media Analysis / Social Network Analysis	http://www-kasm.nii.ac.jp/	Hideaki Takeda	Professor	Master's or PhD students		3-6months	
3	Artificial Intelligence	Articiial Social Intelligence: building intelligence systems with social knowledge and social interaction	http://www-kasm.nii.ac.jp/	Hideaki Takeda	Professor	Master's or PhD students		3-6months	
4	Web & Social Media analysis, Time series analysis	Modeling human activity through mining social time series	http://research.nii.ac.jp/~r-koba/en/index.html	Ryota Kobayashi	Assistant Professor	Master's or PhD students	2	4-6months	Experiences of machine learning, signal processing, and/or statistics will be appreciated. See recent papers in my website for details (Aoki et al., 2016; Kobayashi & Lamboitte 2016).
5	Computational Neuroscience, Simulation	Modeling neural circuits in the brain	http://research.nii.ac.jp/~r-koba/en/index.html	Ryota Kobayashi	Assistant Professor	Master's or PhD students		4-6months	Basic knowledge of optimization, or simulation methods for differential equations will be appreciated.
6	juris-informatics	legal reasoning		Ken Satoh	Professor	Master's or PhD students	3	2-6 month	
7	argumentation	argumentation mining		Ken Satoh	Professor	Master's or PhD students		2-6 month	
8	Knowledge Representation and Reasoning	GPU/Tensor-Based Reasoning	http://research.nii.ac.jp/il/	Katsumi Inoue	Professor	Master's or PhD students	4	3-6 months	Basic knowledge of ASP/CP/SAT solving, deductive/abductive/inductive reasoning and linear algebra are useful. Experience in C++, CUDA, Octave, OpenCL or Python is advantageous to tackle this subject. Contact Prof. Inoue in advance.
9	Knowledge Representation and Reasoning	Integration of Knowledge Representation and Machine Learning	http://research.nii.ac.jp/il/	Katsumi Inoue	Professor	Master's or PhD students		3-6 months	Knowledge in KR, logics, abduction, ILP, CSP and/or optimization as well as machine learning or representation learning are advantageous to tackle this subject. Contact Prof. Inoue in advance.

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10	Machine Learning	Learning Relational Dynamics from State Transition	http://research.nii.ac.jp/il/	Katsumi Inoue	Professor	Master's or PhD students		3-6 months	Basic knowledge of Machine Learning and/or Neural Networks are required. Additionally, knowledge in planning or model checking is useful. Contact Prof. Inoue in advance.
11	Theoretical Computer Science/Machine Learning	Sublinear-time algorithms for continuous optimization problems	http://research.nii.ac.jp/~yyoshida/	Yuichi Yoshida	Associate Professor	PhD students	2	up to 3 months	
12	Theoretical Computer Science/Combinatorial Optimization/Approximation	Submodular Algebra: Algebra on Submodular Transformations	http://research.nii.ac.jp/~yyoshida/	Yuichi Yoshida	Associate Professor	PhD students		up to 3 months	
13	Airtificial Intelligence	Machine Learning for Advanced Driving Assistance Systems	http://ri-www.nii.ac.jp/	Ryutaro Ichise	Associate Professor	Master's or PhD students	4	3-6 months	
14	Airtificial Intelligence	Relational Learning for Knowledge Graph / Linked Data	http://ri-www.nii.ac.jp/	Ryutaro Ichise	Associate Professor	Master's or PhD students		3-6 months	
15	Airtificial Intelligence	Data Mining for Large Scale Data	http://ri-www.nii.ac.jp/	Ryutaro Ichise	Associate Professor	Master's or PhD students		3-6 months	
16	Airtificial Intelligence	Ontology Engineering	http://ri-www.nii.ac.jp/	Ryutaro Ichise	Associate Professor	Master's or PhD students		3-6 months	
17	Formal Language Theory and Algorithmic Learning	Algorithmic Learning of Context-Free Languages	http:;//research.nii.ac.jp/~kanazawa/	Makoto Kanazawa	Associate Professor	PhD students	2	3-6 months	Familiarity with formal language theory is required.
18	Numerical Linear Algebra	Iterative methods, constrained least squares problems, ill-posed problems, application to optimization, etc.	http://researchmap.jp/KenHayami/?lang=english	Ken Hayami	Professor	Master's or PhD students	2	6 months	Knowledge of numerical analysis and programmming is required.

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19	Inverse Problems	Inverse problem in pharamakokinetcs: Application of the Cluster Newton Method	http://www.nii.ac.jp/TechReports/public_html/11-002E.html	Ken Hayami	Professor	Master's or PhD students		6 months	Knowledge of numerical analysis and programmming is required.
20	software verification	separation logic	http://research.nii.ac.jp/~tatsuta/index-e.html	Makoto Tatsuta	Professor	Master's or PhD students	2	2-6 months	
21	Machine Learning	Developing machine learning algorithms for graph structured data	http://mahito.info/index_e.html	Mahito Sugiyama	Associate Professor	PhD students	2	3-6 months	knowledge about statistical machine learning is required
22	Machine Learning/Data mining	Developing machine learning and data mining algorithms using hierarchical models	http://mahito.info/index_e.html	Mahito Sugiyama	Associate Professor	PhD students		3-6 months	knowledge about statistical machine learning and pattern mining is required
23	Intelligent Robotics	Integration of Robot Simulation and Social Agent Simulation http://www.sigverse.org/	http://www.sigverse.org/	Tetsunari Inamura	Associate Professor	Master's or Ph.D students	3	3-6 months	Requred skill: writing software in C++
24	Intelligent Robotics	Concept Acquisition through interaction between Humans and Robots		Tetsunari Inamura	Associate Professor	Master's or Ph.D students		3-6 months	Requred skill: writing software in C++
25	Cognitive Science	Research on sense of agency/ownership using immersive virtual reality		Tetsunari Inamura	Associate Professor	Master's or Ph.D students		3-6 months	
2. Information Systems Architecture Science Research Division									
26	Wireless Communications and Mobile Networks	Spectrum and energy optimization strategies for future 5G wireless access networks	http://www.nii.ac.jp/en/faculty/architecture/kaneko_megumi/	Megumi Kaneko	Associate Professor	Master's or PhD students	2	4-6 months	Required programming skills: Matlab. Basic knowledge in signal processing and wireless/digital communications is required.
27	Programming Languages	Data Interoperability based on Bidirectional Transformation	http://research.nii.ac.jp/~hu http://www.prg.nii.ac.jp	Zhenjiang Hu	Professor	Master's or PhD students	4	3-6 months	Interested in developing a system that can synchronize between window's calender and google's calender? This project aims at a systematic approach to doing so.
28	Programming Environment	Integrated Development Environment for Bidirectional Programming	http://research.nii.ac.jp/~hu http://www.prg.nii.ac.jp	Zhenjiang Hu	Professor	Master's or PhD students		3-6 months	Having experience in developing prorgamming tools.

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29	Parallel Programming	High-Level Parallel Programming for Processing Big Data (Big Graphs)	http://research.nii.ac.jp/~hu http://www.prg.nii.ac.jp	Zhenjiang Hu	Professor	Master's or PhD students		3-6 months	Having experiences of writing parallel programs.
30	Software Engineering	Adaptive Software Engineering	http://research.nii.ac.jp/~hu http://www.prg.nii.ac.jp	Zhenjiang Hu	Professor	Master's or PhD students		3-6 months	Intereted in developing practical software systems.
31	Software Engineering	Security and Privacy Software Engineering on Smart City	http://researchmap.jp/nobukazu/?lang=english	Nobukazu Yoshioka	Associate Professor	PhD students	2	6 months	
32	wireless networks	resource management and quality of service in wireless networks	http://klab.nii.ac.jp/	Yusheng Ji	Professor	Master or Ph.D students	2	3 to 6 months	Understanding of infrastructure-based and/or ad hoc wireless communication systems is expected
33	network architecture	future internet, ICN, SDN	http://klab.nii.ac.jp/	Yusheng Ji	Professor	Master's or PhD students		3 to 6 months	Understanding of computer network and protocols is required
34	Hardware Design	Design Tool for an Asynchronous FPGA	http://www.nii.ac.jp/en/faculty/architecture/yoneda_tomohiro/	Tomohiro Yoneda	Professor	Master's or PhD students	1	6 months	
35	Programming Languages	Program sysnthesis	http://researchmap.jp/tsushima/?lang=english, https://github.com/k-tsushima/OCPet/blob/master/OCPet.pdf	Kanae Tsushima	Assistant Professor	Master's or PhD students	3	4-6 months	
36	Programming Languages	Type error debugging of functional languages	http://link.springer.com/chapter/10.1007%2F978-3-642-41582-1_12#page-1, http://www.is.ocha.ac.jp/~asai/TypeDebugger/	Kanae Tsushima	Assistant Professor	Master's or PhD students		4-6 months	Interested in developing practical software systems.
37	Programming Languages	Type error debugging using machine learning	http://researchmap.jp/tsushima/?lang=english	Kanae Tsushima	Assistant Professor	Master's or PhD students		4-6 months	Interested in programming languages and machine learning.
38	Self-adaptive System	Models@runtime for self-adaptive systems	http://www.honiden.nii.ac.jp/en/research/mdd-for-sas.html	Kenji Tei	Associate Professor	Master's or PhD students	3	2 to 6 months	See the web site
39	Computer network	DNS active measurements	http://www.fukuda-lab.org	Kensuke Fukuda	Associate Professor	Master's or PhD students	3	5-6months	Start in March 2018. Solid programming skill in python (and knowledge on RIPE altas probe).
40	Computer network	IPv6 network scan and machine learning	http://www.fukuda-lab.org	Kensuke Fukuda	Associate Professor	Master's or PhD students		5-6months	Start in March 2018.. Solid programming skill in C and/or tensorflow (or chainer).

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41	Computer network	Web privacy measurements	http://www.fukuda-lab.org	Kensuke Fukuda	Associate Professor	Master's or PhD students		5-6months	Start in March 2018. Solid programming skill in javascript, and python.
42	Computer network	Blockchain network analysis	http://www.fukuda-lab.org	Kensuke Fukuda	Associate Professor	PhD students		3-6months	Start in March 2018. Solid programming skill in python (and knowledge on blockchain).
43	Gamification, Motivation	Motivational Methods for Educational Smartphone Application named WillingQuiz	http://goo.gl/xMePpN	Kazunori Sakamoto	Assistant Professor	Master's or PhD students	4	2 - 6 months	We can accept students until 31st Mar 2018. We welcome students who love programming and creative activities. E-mail: exkazuu@nii.ac.jp LinkedIn: http://goo.gl/em22I4
44	Theoretical Computer Science	Automata-Theoretic Techniques in Formal Verification	http://group-mmm.org/eratommsd/about.html	Ichiro Hasuo	Associate Professor	Master's or PhD students	4	6 months (or shorter)	Our focus will be on quantiative modeling and verification (probabilistic, weighted, timed, etc.). Desired: solid backgrounds in logic, automata and formal languages.
45	Software Science	Machine Learning Techiniques Applied to Search-Based Testing	http://group-mmm.org/eratommsd/about.html	Ichiro Hasuo	Associate Professor	Master's or PhD students		6 months (or shorter)	Search-based testing of cyber-physical systems (also called "falsification") is attracting attention as a practical quality-assurance technique. It nicely combines formal methods and machine learning on the theoretical sides; on the implementation side there are many interesting challenges, too.
46	Software Science/Control Engineering	Optimization-Based Synthesis of Lyapunov Functions and Other Correctness Certificates	http://group-mmm.org/eratommsd/about.html	Ichiro Hasuo	Associate Professor	Master's or PhD students		6 months (or shorter)	Correctness certificates for various systems and specifications (Lyapunov functions, ranking functions, invariants, etc.) sometimes allow efficient numeric search via convex optimization algorithms. This is also where software science and control engineering meet.
47	Theoretical Computer Science	Categorical Modeling of Verification Techniques	http://group-mmm.org/eratommsd/about.html	Ichiro Hasuo	Associate Professor	Master's or PhD students		6 months (or shorter)	Various verification techniques allow abstraction by the language of category theory (especially coalgebras). This sometimes aids generalization and transition from qualitative to quantitative. Desired: familiarity with basic category theory.
3. Digital Content and Media Sciences Research Division									
48	computer vision	One of the following topics. (1) 3D vision, (2) Recognizing human activities, (3) Gaze sensing and gaze navigation, and (4) object segmentation from video.	http://www.dgcv.nii.ac.jp	Akihiro Sugimoto	Professor	Master's or Ph.D Student	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 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.

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49	discrete 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 Ph.D Student		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.
50	Media Clones	Development of methods for protecting the privacy, biological, and environmental information to prevent fake information generation.	http://www2c.comm.eng.osaka-u.ac.jp/proj/mc/eindex.html	Isao Echizen	Professor	Master's or PhD students	4	3-6months	
51	Media Clones	Verification of the capability of generating various types of media clones such as audio, visual, text, and social media derived from the fake information.	http://www2c.comm.eng.osaka-u.ac.jp/proj/mc/eindex.html	Isao Echizen	Professor	Master's or PhD students		3-6months	
52	Security	Fundamental techniques and systems for content security	http://research.nii.ac.jp/~iechizen/official/research-e.html	Isao Echizen	Professor	Master's or Ph.D Student		3-6months	
53	Privacy	Privacy-enhancing technologies for resolving trade-offs between data anonymity and utility	http://research.nii.ac.jp/~iechizen/official/research-e.html	Isao Echizen	Professor	Master's or Ph.D Student		3-6months	
54	text mining	Text mining based on probabilistic model	http://www.ldear.nii.ac.jp/~takasu/en/	Atsuhiro Takasu	Professor	Master's or Ph.D Student	2	3-6 months	
55	Big Data	data analysis and mining methods for (sensor) big data	http://www.ldear.nii.ac.jp/~takasu/en/	Atsuhiro Takasu	Professor	Master's or Ph.D Student		3-6 months	
56	content-based image and video analysis	video and image semantic analysis and search (esp. TRECVID LOC and AVS task. see: http://www-nlpir.nist.gov/projects/trecvid/)	http://research.nii.ac.jp/~satoh	Shin'ichi Satoh	Professor	Master's or Ph.D (Ph.D preferable)	5	more than 90 days	
57	content-based image and video analysis	identification of specific object in video and image (esp. TRECVID instance search. see: http://www-nlpir.nist.gov/projects/trecvid/)	http://research.nii.ac.jp/~satoh	Shin'ichi Satoh	Professor	Master's or Ph.D (Ph.D preferable)		more than 90 days	

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58	content-based image and video analysis	Event detection and action recognition (esp. TRECVID multimedia event detection task. see: http://www-nlpir.nist.gov/projects/trecvid/)	http://research.nii.ac.jp/~satoh	Shin'ichi Satoh	Professor	Master's or Ph.D (Ph.D preferable)		more than 90 days	
59	content-based image and video analysis	Image and Video Captioning (esp. TRECVID Video-to-Text pilot task or Microsoft Video to Language Challenge: see http://ms-multimedia-challenge.com/challenge)	http://research.nii.ac.jp/~satoh	Shin'ichi Satoh	Professor	Master's or Ph.D (Ph.D preferable)		more than 90 days	
60	Multimedia Data Mining and Analysis	People activities analytics in the context of social online presences and real physical behaviours in multimedia landscape (e.g., deep learning for multimedia content recommendation, personalized venue inference, enhancing online education by leveraging social media techniques)	http://research.nii.ac.jp/~yiyu/	Yi Yu	Assistant Professor	Master's or PhD students	4	3-6months	
61	Music Information Retrieval and Its Applications	Music discovery (e.g., content-based deep learning for cold start problem in music recommendation, personalized retrieval and playlisting)	http://research.nii.ac.jp/~yiyu/	Yi Yu	Assistant Professor	Master's or PhD students		3-6months	
62	Signal Processing	graph-based image restoration and processing	http://research.nii.ac.jp/~cheung/intern.html	Gene Cheung	Associate Professor	Master's or PhD students	3	3 months minimum	background in signal processing, optimization and linear algebra is necessary
63	Geometric Computer Vision	3D Reconstruction for Large-Scale Image Collections; 3D Scan Using Mobile Devices (structure-from-motion, SLAM, pose estimation, minimal problems, et al.)	http://researchmap.jp/yinqiangzheng	Yinqiang Zheng	Assistant Professor	Master's or PhD students	4	3-6 months	Students with strong mathematical and programming skills are preferred.
64	Photometric Computer Vision	Hyperspectral/Multispectral Image Capture/Denoising/Analysis (illumination and reflectance analysis, intrinsic image, specularity, shadow, fluorescence, et al.)	http://researchmap.jp/yinqiangzheng	Yinqiang Zheng	Assistant Professor	Master's or PhD students		3-6 months	Students with strong mathematical and programming skills are preferred.
65	Text Media	Analysis and assistance of human reading/writing	http://www-al.nii.ac.jp	Akiko Aizawa	Professor	Master's or Ph.D students	3	3-6months (6 months is preferable)	

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66	Text Media	Scientific paper mining and recommendation	http://www-al.nii.ac.jp	Akiko Aizawa	Professor	Master's or Ph.D students		3-6months (6 months is preferable)	
67	Text Media	Natural language understanding	http://www-al.nii.ac.jp	Akiko Aizawa	Professor	Master's or Ph.D students		3-6months (6 months is preferable)	
68	Digital Humanities	Machine learning for image processing (esp. character recognition), geographic and spatial information, Semantic Web for cultural heritage	http://agora.ex.nii.ac.jp/~kitamoto/education/internship/	Asanobu Kitamoto	Associate Professor	Master's or PhD students	4	3-6 months	A student with programming skills and interests in real problems is preferred.
69	Earth Environmental Informatics	Big data analytics (esp. image processing, remote sensing and machine learning) for solving environmental and societal problems	http://agora.ex.nii.ac.jp/~kitamoto/education/internship/	Asanobu Kitamoto	Associate Professor	Master's or PhD students		3-6 months	A student with programming skills and interests in real problems is preferred.
70	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	Associate Professor	Master's or PhD students		3-6 months	A student with programming skills and interests in real problems is preferred.
71	Open Science	Citizen science, crowdsourcing, open data, data and metadata management system, scholarly information platform	http://agora.ex.nii.ac.jp/~kitamoto/education/internship/	Asanobu Kitamoto	Associate Professor	Master's or PhD students		3-6 months	A student with programming skills and interests in real problems is preferred.
72	Speech information processing	Duration and prosody for expressive speech synthesis	Relevant papers include, but do not limited to, [1] Jaime Lorenzo-Trueba, Shinji Takaki, Junichi Yamagishi, A comparative study on modeling and controlling emotional acoustic parameters in neural networks based Japanese and Spanish speech synthesis, 18th SLP symposium, Dec 2016	Junichi Yamagishi	Associate Professor	PhD students	3	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 and experience with statistical parametric speech synthesis. • Familiarity with software tools including HTK, HTS, SPTK, Festival, DNN tools is preferable
73	Speech information processing	Waveform generation for DNN speech synthesis	Relevant papers include, but do not limited to, [2] A Deep Auto-Encoder based Low-Dimensional Feature Extraction from FFT Spectral Envelopes for Statistical Parametric Speech Synthesis, Shinji Takaki, Junichi Yamagishi, Proc. ICASSP 2016 SP-6.7 March 2016	Junichi Yamagishi	Associate 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 and experience with statistical parametric speech synthesis and signal processsing • Familiarity with software tools including HTK, HTS, SPTK, Festival, DNN tools is preferable

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74	Speech information processing	Speaker adaptation for DNN speech synthesis	Relevant papers include, but do not limited to, [3] Hieu-Thi Luong, Shinji Takaki, Gustav Eje Henter, Junichi Yamagishi, "ADAPTING AND CONTROLLING DNN-BASED SPEECH SYNTHESIS USING INPUT CODES", Proc ICASSP 2017	Junichi Yamagishi	Associate 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 and experience with statistical parametric speech synthesis. • Familiarity with software tools including HTK, HTS, SPTK, Festival, DNN tools is preferable
75	Speech information processing	New DNN architectures and theory for speech synthesis	Relevant papers include, but do not limited to, [4] Xin Wang, Shinji Takaki, Junichi Yamagishi, "Investigating Very Deep Highway Networks for Parametric Speech Synthesis", 9th ISCA Workshop on Speech Synthesis (Satellite workshop after INTERSPEECH 2016) September 2016, [5] Xin Wang, Shinji Takaki, Junichi Yamagishi, "AN AUTO REGRESSIVE RECURRENT MIXTURE DENSITY NETWORK FOR PARAMETRIC SPEECH SYNTHESIS", Proc ICASSP 2017	Junichi Yamagishi	Associate 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 and experience with statistical parametric speech synthesis and machine learning. • Familiarity with software tools including HTK, HTS, SPTK, Festival, DNN tools is preferable
76	Speech information processing	Natural language processing for DNN speech synthesis	Relevant papers include, but do not limited to, [6] Xin Wang, Shinji Takaki, Junichi Yamagishi, "Enhance the word vector with prosodic information for the recurrent neural network based TTS system", Interspeech 2016, Sept 2016	Junichi Yamagishi	Associate 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 and experience with statistical parametric speech synthesis and natural langauge processing. • Familiarity with software tools including HTK, HTS, SPTK, Festival, DNN tools is preferable
77	Speech information processing	DNN-based automatic speaker verifications and its anti-spoofing	Relevant papers and webpage include, but do not limited to, [7] ASVspoof 2015: the First Automatic Speaker Verification Spoofing and Countermeasures Challenge, Zhizheng Wu, Tomi Kinnunen, Nicholas Evans, Junichi Yamagishi, Cemal Hanilc, Md Sahidullah Aleksandr Sizov, Interspeech 2015 2037-2041 Sept 2015 [8] http://www.spoofingchallenge.org/	Junichi Yamagishi	Associate 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 software tools including ALIZE, MSR identity toolbox, Sidekit, DNN tools is preferable

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78	Speech information processing	Other modality or multimodality that are relevant to speech synthesis or speaker verification	Relevant papers include, but do not limited to, [9] The use of articulatory movement data in speech synthesis applications: an overview –Application of articulatory movements using machine learning algorithms–, Korin Richmond, Zhenhua Ling, Junichi Yamagishi, Acoustical Science and Technology 36(6) 1-12 Nov 2015	Junichi Yamagishi	Associate Professor	PhD students		4-6 months	Examples of the other modality and/or multimodality include audio visual synthesis/verification, automatic natural language generation, machine translation, articulatory information, and music/singing. 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 relevant software tools including DNN tools is preferable
79	Database Programming Languages	Data Provenance for Declarative Query Languages	http://research.nii.ac.jp/~kato	Hiroyuki Kato	Assistant Professor	Master's or PhD students	2	2-6 months	
80	Database Programming Languages	Query Optimization based on a Static Analysis	http://research.nii.ac.jp/~kato	Hiroyuki Kato	Assistant Professor	Master's or PhD students		2-6 months	
81	Software Engineering (Formal Methods)	Continous Modeling and Validation of Complex Systems with Flexible Refinement	http://research.nii.ac.jp/~f-ishikawa/en/lab.html	Fuyuki Ishikawa	Associate Professor	Master's or PhD students	4	2-6 months	
82	Software Engineering (Internet of Things, Models@run.time, Self-* Systems)	Runtime Validation and Configuration of Smart Space Systems	http://research.nii.ac.jp/~f-ishikawa/en/lab.html	Fuyuki Ishikawa	Associate Professor	Master's or PhD students		2-6 months	
83	Software Engineering (Cyber-Physical Systems, Testing, Formal Methods)	Formal Methods and Intelligence for Dependable Cyber-Physicasl Systems	http://research.nii.ac.jp/~f-ishikawa/en/lab.html	Fuyuki Ishikawa	Associate Professor	Master's or PhD students		2-6 months	
84	Unmanned Aerial Systems Traffic Management (UTM) - Algorithms and Real-time Distributed Systems	Research and development of real-time algorithms for (1) Conflict Detection and Resolution (CDR) among drones (centralized and decentralized), and (2) Dynamic Airspace Configuration for efficient usage of low-altitude airspace. Investigation and implementation of entire UTM archictecture, incl. operator interface. This work is part of a new large-scale Japanese Government project on designing, specifying, and testing UTM in Japan. It is similar to NASA UTM.	www.siliconmountain.jp	Helmut Prendinger	Professor	Master's or PhD students	12	4-6 months	Solid programming and software engineering skills; interest to create reliable and robust software that will be deployed in the real world; interest to go to the "field" and test advanced systems in the real world. Longer stay (6 months) is preferred for good result or publication (http://research.nii.ac.jp/~prendinger/)

List of research topics for NII International Internship Program 2017 2nd 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
85	Unmanned Aerial Vehicle (Robotics, Electronics, Embedded Systems)	Setup of custom-made drone configuration based on DJI Matrice 100 and M600 research platform, incl. flight controller, onboard processing, communications, visual and thermal sensing, etc.	www.siliconmountain.jp	Helmut Prendinger	Professor	Master's or PhD students		4-6 months	Solid programming in C/C++; interest in drone-related robotics
86	Deep Learning - Object and Action Recognition	Research and development of Deep Learning models for (1) real-time object recognition and tracking, (2) action recognition, and (3) semantic segmentation (pixel-wise labeling) with the goal of creating a "dynamic map" (DM) from the UAV perspective. DM-based services incl. advanced surveillance, security and generally, situational awareness. The system will be tested by superchip on drone. We already have several models for (1)-(3) running.	www.siliconmountain.jp	Helmut Prendinger	Professor	Master's or PhD students		4-6 months	Solid programming skills, e.g., C++ and Python. Solid background in machine learning and Deep Learning. Longer stay (6 months) is preferred for good result and possibly a publication (http://research.nii.ac.jp/~prendinger/)
87	Deep Learning - Infrastructure Degradation Classification	Research and development of Deep Learning models for detecting the type and level of damage of infrastructure. We have a large-scale data set of damaged components of bridges in Japan. The project is a collaborative work with academia and industry.	www.siliconmountain.jp	Helmut Prendinger	Professor	Master's or PhD students		4-6 months	Solid programming skills, e.g., C++ and Python. Solid background in machine learning and Deep Learning. Longer stay (6 months) is preferred for good result and possibly a publication (http://research.nii.ac.jp/~prendinger/)
88	Cooking recipe	Cooking Recipe Recommendation Benchmark	http://tinyurl.com/ybkxfg89	Frederic Andres	Associate Professor	Master's or PhD students	4	up to 6 months	cooperation linked to the Cooking Recipe without borders research group
89	Cooking recipe	Cooking Process centric ontology and Linked Open Data	http://tinyurl.com/y8qbgppw	Frederic Andres	Associate Professor	Master's or PhD students		up to 6 months	cooperation linked to the Cooking Recipe without borders research group

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90	Cooking recipe	Knowledge based and Collective Intelligence-centric multi-classifcation of CRWB benchmark dataset	http://tinyurl.com/yc29xf8y	Frederic Andres	Associate Professor	PhD students		up to 6 months	cooperation linked to the Cooking Recipe without borders research group
91	Early Warning sharing and Problem sharing	Heterogeneous Ad Hoc Network for Skill	http://tinyurl.com/y8kk9lhg	Frederic Andres	Associate Professor	Master's or PhD students		up to 6 months	Cooperation project between UCA and NII

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92	Natural Language Processing	Syntactic/Semantic Parsing	http://kmcs.nii.ac.jp/mylab/	Yusuke Miyao	Associate Professor	Master's or PhD students		6 months	Fundamental knowledge about one of the following areas is required: 1. statistical parsing methods (e.g. PCFG parsing, dependency parsing), or 2. syntactic theory (e.g. HPSG, CCG)
93	Natural Language Processing	Question Answering over Linked Data	http://kmcs.nii.ac.jp/mylab/	Yusuke Miyao	Associate Professor	Master's or PhD students	2	6 months	Fundamental knowledge about one of the following areas is required: 1. structured machine learning methods (e.g. CRF, tree kernel methods), or 2. semantic web technologies (e.g. SPARQL)
94	Natural Language Processing	Vision and Text Processing	http://kmcs.nii.ac.jp/mylab/	Yusuke Miyao	Associate Professor	Master's or PhD students		6 months	Fundamental knowledge about one of the following areas is required: 1. vision processing techniques (e.g. CNN), or 2. deep learning techniques for text processing (e.g. LSTM)
95	Computer Vision and Computer Graphics	Computational Photography: Image-based rendering, Image processing, Color analysis, Spectral imaging	http://research.nii.ac.jp/~imarik	Imari Sato	Professor	Master's or PhD students	3	5 to 6 months	A basic knowledge of computer graphics and good programming skills are required
4. Information and Society Research Division									
96	Software Testing	Testing Machine Learning Computer Programs	http://researchmap.jp/nkjm/	Shin Nakajima	Professor	Master's or Ph.D students	2	2 - 6 months	Contact the supervisor for details before applying the internship program
97	Formal Methods	Refinement-based Modeling with Event-B	http://researchmap.jp/nkjm/	Shin Nakajima	Professor	Master's or Ph.D students		2 - 6 months	Contact the supervisor for details before applying the internship program
98	Formal Verification	Model-Checking of Machine Learning Framework	http://researchmap.jp/nkjm/	Shin Nakajima	Professor	Master's or Ph.D students		2 - 6 months	Contact the supervisor for details before applying the internship program
99	Formal Verification	Model-Checking of Causal Loop Diagrams	http://researchmap.jp/nkjm/	Shin Nakajima	Professor	Master's or Ph.D students		2 - 6 months	Contact the supervisor for details before applying the internship program

List of research topics for NII International Internship Program 2017 2nd 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
100	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	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) enhance the method to assess the "success" of complex/exploratory search outcome based on Concept map and others, 2) investigate user search bahaviour in terms of dwell time, link depth, search trail, , engagement, perceived task difficulty, cognitive task complexity, and/or outcome, 3) investigate the relationship between user's attributes such as domain expertise, task familiarity, time constraint, etc. and the search behaviour and outcomes, 4) building and/or enhancing the tools usable for the above mentioned 1) -3). Any other topic related to this research direction shall be considered.
101	Interactive Information Retrieval	Investigating what/how Concept map captures each user's search outcome and its influence on the search process		Noriko Kando	Professor	Either Master and PhD students		6 months	Concept map is originally used in the educational science, but it has been used as a tool to capther each user's knowledge structure change during complex search task such as "search as learning. This project investigate the role of the concept map in the search process through the experiments
102	Complex Question Answering and/or Text Summarization	Evaluating System-created Essaies and/or summaries	http://research.nii.ac.jp/qalab/	Noriko Kando	Professor	Either Master and PhD students		6 months	Using the system created essays at NTCIR's QA Lab shared task series, this project aims 1) survey of the exisiting automatic evaluation methodologies for essay writing,, text generation, summarization, and complex QA,; 2) propose and evaluate automatic evaluation methodologies of essaies and summarization using empirical data sets.

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5. Management and Outside Collaboration on R&D									
103	Databases / Data Mining	Similarity Search and Intrinsic Dimensionality	http://zephyr.nii.ac.jp/houlelab/downloads/proj-simsearch.pdf	Michael Houle	Visiting Professor	Master's or PhD students	6	3-6 months	Priority given to PhD students, and for internships of 5-6 months.
104	Data Mining	Outlier Detection and Data Dimensionality	http://zephyr.nii.ac.jp/houlelab/downloads/proj-outlier.pdf	Michael Houle	Visiting Professor	Master's or PhD students		3-6 months	Priority given to PhD students, and for internships of 5-6 months.
105	Data Mining	Clustering and Data Dimensionality	http://zephyr.nii.ac.jp/houlelab/downloads/proj-clust.pdf	Michael Houle	Visiting Professor	Master's or PhD students		3-6 months	Priority given to PhD students, and for internships of 5-6 months.
106	Data Mining / Machine Learning	Unsupervised Feature Selection	http://zephyr.nii.ac.jp/houlelab/downloads/proj-features.pdf	Michael Houle	Visiting Professor	Master's or PhD students		3-6 months	Priority given to PhD students, and for internships of 5-6 months.
107	Data Mining / Machine Learning	KNN Classification and Applications	http://zephyr.nii.ac.jp/houlelab/downloads/proj-classification.pdf	Michael Houle	Visiting Professor	Master's or PhD students		3-6 months	Priority given to PhD students, and for internships of 5-6 months.
108	Theory (Algorithmics, Statistics, Machine Learning)	Theory of Intrinsic Dimensionality	http://zephyr.nii.ac.jp/houlelab/downloads/proj-id-theory.pdf	Michael Houle	Visiting Professor	Master's or PhD students		3-6 months	Priority given to PhD students, and for internships of 5-6 months.