List of Research topics for 2011 1st call

as of March 4, 2011

No.	Research Area	Title of the research(Website for more information)	Name of Supervisor	Requirements for applicants: Master/Ph.D. Student	Numbers of acceptance	Duration : 2-6months （less than 180days)	Comments
1. Principles of Informatics Research Division							
1	Principles of Informatics	Lambda-Calculus and Type Theory http://research.nii.ac.jp/~tatsuta/index-e.html	Professor Makoto Tatsuta (龍田教授)	Master and Ph.D students	1	2-6 months	It would be better to know lambda-calculus, type theory, or mathematical logic.
2	Artificial Intelligence / Systems Biology	Automated Reasoning and Hypothesis Finding for Systems Biology http://research.nii.ac.jp/il/	Professor Katsumi Inoue (井上教授)	Master or Ph.D students	3	2-6 months	Basic knowledge of Artificial Intelligence and/or Bioinformatics is required.
3	Multi-Agent Systems / Machine Learning	Distributed Architecures for Deduction, Abduction and Induction http://research.nii.ac.jp/il/	Professor Katsumi Inoue (井上教授)	Master or Ph.D students		2-6 months	Basic knowledge of Artificial Intelligence and/or Computer Science is required.
4	Logic Programming / Computational Logic	Answer Set Programming, Constraint Programming, and Satisfiability http://research.nii.ac.jp/il/	Professor Katsumi Inoue (井上教授)	Master or Ph.D students		2-6 months	Basic knowledge of Logic and/or Computer Programming is required.
5	Cooperative Query Answering on the Web	Development and Analysis of a Web-based Query Answering System http://wiese.free.fr/	Professor Katsumi Inoue (井上教授)	Master or Ph.D students	2	3-6 month	High level of Web programming skills, basic knowledge of logic and theorem proving

6	Knowledge Processing	Data mining methods for linked data http://ri-www.nii.ac.jp/	Assoc. Professor Ryutaro Ichise (市瀬准教授)	Master and Ph.D students	3	4-6 months	
7	Knowledge Processing	Machine learning methods for semantic integration http://ri-www.nii.ac.jp/	Assoc. Professor Ryutaro Ichise (市瀬准教授)	Master and Ph.D students		4-6 months	
8	Quantum information	Quantum computing with Bose-Einstein condensates (http://research.nii.ac.jp/~tbyrnes/)	Assis. Professor Tim Byrnes (バーンズ助教)	Master and Ph.D students	2	6 months	
9	Quantum simulation/Solid state physics	BEC-BCS crossover with exciton-polaritons (http://research.nii.ac.jp/~tbyrnes/)	Assis. Professor Tim Byrnes (バーンズ助教)	Master and Ph.D students	1	6 months	
10	Intelligent systems	Domain based text mining and knowledge acquisition (http://biocaster.nii.ac.jp)	Assoc. Professor Nigel Collier (コリアー准教授)	Master and Ph.D students	5	4-6 months	
11	Intelligent systems	Biomedical literature mining for building disease databases (http://sites.google.com/site/nhcollier/)	Assoc. Professor Nigel Collier (コリアー准教授)	Master and Ph.D students		4-6 months	
12	Intelligent systems	Mining financial blogs for opinion and sentiment tracking (http://sites.google.com/site/nhcollier/)	Assoc. Professor Nigel Collier (コリアー准教授)	Master and Ph.D students		4-6 months	

13	Intelligent robotics	Behavior Imitation on a Humanoid Robot http://www.iir.nii.ac.jp/research_01.html	Assoc. Professor Tetsunari Inamura (稲邑准教授)	Master or Ph.D		3-6 months	Requred skill: writing software in C++
14	Intelligent robotics	Intelligent tele-operation system for network robots http://www.iir.nii.ac.jp/research_02.html	Assoc. Professor Tetsunari Inamura (稲邑准教授)	Master or Ph.D	4	3-6 months	Requred skill: writing software in C++
15	Intelligent robotics	Integration of Robot Simulation and Social Agent Simulation http://www.iir.nii.ac.jp/research_04.html	Assoc. Professor Tetsunari Inamura (稲邑准教授)	Master or Ph.D		3-6 months	Requred skill: writing software in C++
16	Data Structures	Advanced Data Structures http://researchmap.jp/sada	Assoc. Professor Kunihiko Sadakane (定兼准教授)	Ph.D	2	3-6 months	Basic knowlodge of algorithms and data structures is required.
17	Principles of Informatics	Semantic Web / Linked Data http://www-kasm.nii.ac.jp/~takeda/index.html	Professor Hideaki Takeda (武田教授)	Master and Ph. D students		2-6 months	
18	Principles of Informatics	Social Web / Social Network Analysis http://www-kasm.nii.ac.jp/~takeda/index.html	Professor Hideaki Takeda (武田教授)	Master and Ph. D students	3	2-6 months	
19	Principles of Informatics	Semantic Web for Academic Publication, Library and Museum http://www-kasm.nii.ac.jp/~takeda/index.html	Professor Hideaki Takeda (武田教授)	Master and Ph. D students		2-6 months	

20	Formal Language Theory	Open Problems on Multiple Context-Free Grammars and Related Formalisms http://research.nii.ac.jp/~kanazawa/FormalGrammar/index.html http://research.nii.ac.jp/~kanazawa/mcfgplus.html http://research.nii.ac.jp/~kanazawa/publications/index.html	Assoc. Professor Makoto Kanazawa (金沢准教授)	Master's or Ph.D. students	2	3-6 months	Candidates should have mastered the basics o automata and computability theory and be mathematically mature enough to be able to tackle open problems. See my recent publications and lecture notes "Formal Grammar: An Introduction", available on my web site, for examples of research on this topic.
21	Numerical Analysis	Numerical Linear Algebra, Inverse Problem http://research.nii.ac.jp/~hayami/index-e.html	Professor Ken Hayami (速水教授)	Master / Ph.D.	1	3-6 months	Basic knowledge of linear algebra, programming, numerical analysis is required. Preferably starting after mid August
22	Quantum computation and communication	Computer architecture for quantum information processing www.qis.ex.nii.ac.jp	Professor Kae Nemoto (根本教授)	Master / Ph.D Student	2	2-6 months	
23	Quantum computation and communication	Quantum devices www.qis.ex.nii.ac.jp	Professor Kae Nemoto (根本教授)	Master / Ph.D Student		2-6 months	
24	Principles of Informatics	Graph Algorithm http://research.nii.ac.jp/~k_keniti	Professor Ken-ichi Kawarabayashi (河原林教授)	Ph.D. Student	1	Up to 3months	
25	Logical Aspects of Multi-Agent Systems	Logical Implementation of Multi-agent systems	Professor Ken Satoh （佐藤健教授）	Master/ PhD	2	2-6months	
26	Legal Reasoning	Logical Analysis of Legal Reasoning	Professor Ken Satoh （佐藤健教授）	Master/ PhD	1	2-6months	

2. Information Systems Architecture Science Research Division							
27	Software Engineering	Evolution of modeling languages and models (http://www.biglab.org/, http://swen.uwaterloo.ca/~y6xiong/synchronizationOverview.html	Professor Zhenjiang Hu (胡教授)	Master / Ph.D Student	3	2-6 months	Example: Developing a tool for supporting syncronization of PIM and PSM models.
28	Programming Language	Bidirectional programming and roundtrip engineering (http://research.nii.ac.jp/~hu/project/bix.html)	Professor Zhenjiang Hu (胡教授)	Master / Ph.D Student		2-6 months	Example: Implementation of a domain-specific bidirectional model transformation language
29	Parallel Programming	Sysmetatic parallel programming with homomorphism and mapReduce (http://research.nii.ac.jp/~hu/project/skepara.html)	Professor Zhenjiang Hu (胡教授)	Master / Ph.D Student		2-6 months	Example: Developing a tool for supporting efficient parallel programming with mapReduce.
30	Dependable Software Engineering	Algebraic Specification of Aspect-Oriented Software http://researchmap.jp/nkjm/	Professor Shin Nakajima (中島教授)	Master / Ph.D. Student	1	3-5 months	Required : Knowledge on JPM of AspectJ, Should contact the internship supervisor before the application
31	Dependable Software Engineering	Software Modeling with Event-B/RODIN http://researchmap.jp/nkjm/	Professor Shin Nakajima (中島教授)	Master / Ph.D. Student		3-5 months	Required : Software Modeling with Set-theory, Should contact the internship supervisor before the application
32	Dependable Software Engineering	Algorithmic Verification of Software http://researchmap.jp/nkjm/	Professor Shin Nakajima (中島教授)	Master Student		3-5 months	Required : Programming in C, Should contact the internship supervisor before the application

33	Interconnection Network	Interconects for many-core computer systems, http://research.nii.ac.jp/~koibuchi/theme_e.html	Assoc. Professor Michihiro Koibuchi （鯉渕准教授)	Ph.D students	2	2-6 months	
34	Constraint Programming	Theory and Practice of Constraint Programming http://www.informaticians.org/hosobe/intern.html	Assoc. Professor Hiroshi Hosobe (細部准教授)	Master and Ph.D. students	3	2-6 months	
35	distributed algorithm	In-network processing for sensor networks	Assoc. Professor Yusheng Ji (計准教授)	Master and Ph.D	4	2-6 months	Basic programming skills and a general interest to design and study algorithms analytically is expected
36	distributed algorithm	Classification of situations based on RF-channel measurements	Assoc. Professor Yusheng Ji (計准教授)	Master and Ph.D		2-6 months	Basic knowledge on pattern recognition and a general interest in experiments with software defined radios is expected
37	communication networks	Resource management and QoS control in wireless networks http://research.nii.ac.jp/~kei/	Assoc. Professor Yusheng Ji (計准教授)	Master and Ph.D		3-6 months	Basic understanding on infrastructure-based and/or ad hoc wireless communication systems
38	Cloud Computing	edubase Cloud Project http://grace-center.jp/en/prj_educloud.html	Assoc. Professor Nobukazu Yoshioka (吉岡准教授)	Master/Pd.D	2	3-6months	
39	Security	Security Engineering Project http://www.sse-project.org/confluence/display/SSE/CallForPosition	Assoc. Professor Nobukazu Yoshioka (吉岡准教授)	Master/Ph.D	1	3-6 months	

40	Software Engineering	Multi-Criteria Service Composition for Mobil Devices http://homepages.uni-paderborn.de/kloepper/internship1.html	Professor Shinichi Honiden (本位田教授)	Master/Ph.D.	1	3-6 months	
41	Software Engineering	Planning for Self-healing Systems http://homepages.uni-paderborn.de/kloepper/internship2.html	Professor Shinichi Honiden (本位田教授)	Master/Ph.D.	1	3-6 month	
42	Programming languages	Programming language support for component integration (http://www.monomorphic.org/poplar)	Professor Shinichi Honiden (本位田教授)	Master/Ph.D student	1	3-6 month	
43	Embedded system software	Development of Automotive application software for a dependable NOC(Network-on-Chips) platform, http://www.dvlsi.jst.go.jp/english/list/h20-03.html	Professor Tomohiro Yoneda (米田教授)	PhD Student	2	6 months	
44	Computer Science	Bidirectional Graph Transformations http://research.nii.ac.jp/~hidaka/internship	Assist. Professor Soichiro Hidaka (日高助教)	Master and Ph.D Students	1	2-6 months	

3. Digital Content and Media Sciences Research Division							
45	computer vision	One of the following topics -3D Object modeling using a range scanner -Recognizing human activities from video - Scene categorization and event recognition for 3D scene modeling - Gaze sensing and visual attention estimation http://research.nii.ac.jp/~sugimoto/	Professor Akihiro Sugimoto (杉本教授)	PhD Student	3	Up to 6 months (at least 3 months; a longer period is better)	Rigorous background on mathematics is required. Programming skills on image processing and computer vision are also required.
46	mathematical engineering	Geometric computing theory for integer points	Professor Akihiro Sugimoto (杉本教授)	PhD students only	1	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.
47	3D Internet and Virtual Worlds	R&D in the Foundations of the 3D Internet (OpenSimulator, RealXtend) http://www.prendingerlab.net/globallab/	Assoc. Professor Helmut Prendinger (プレンディンガー准教授)	Master and Ph.D. students	9	3-6 months	Solid programming background (e.g. C++ or C Sharp) Longer stay preferred for good result (some interesting software). Paper writing will be supported.
48	3D Internet and Virtual Worlds	Application-oriented reserarch in the 3D Internet, incl. simulation, "serious games", and visualization in agriculture and bio-safety training http://www.prendingerlab.net/globallab/	Assoc. Professor Helmut Prendinger (プレンディンガー准教授)	Master and Ph.D. students		3-6 months	Solid programming background (e.g. C++ or C Sharp) Longer stay preferred for good result (some interesting software). Paper writing will be supported.
49	3D Internet and Virtual Worlds	OpenEnergySim: an open source platform fo exploring “Green ITS” (Intelligent Transport System) and eco-driving in the OpenSim virtual world (immersive driving with game wheel, traffic simulation, CO2 emission simulation, collaborative evaluation framework of ITS measures, modeling driver behavior, etc) http://www.prendingerlab.net/globallat	Assoc. Professor Helmut Prendinger (プレンディンガー准教授)	Master and Ph.D. students		3-6 months	Solid programming background (e.g. C++ or C Sharp) Longer stay preferred for good result (some interesting software). Paper writing will be supported.
50	3D Internet and Virtual Worlds	R&D of a client-side prediction for RealXtend viewer, based on prediction model of online multi-player games http://www.prendingerlab.net/globallab/	Assoc. Professor Helmut Prendinger (プレンディンガー准教授)	Master and Ph.D. students		3-6 months	Solid programming background (e.g. C++ or C Sharp) Longer stay preferred for good result (some interesting software). Paper writing will be supported.

51	Natural Language Processing	Syntactic and Semantic Parsing http://www-tsujii.is.s.u-tokyo.ac.jp/enju/	Assoc. Professor Yusuke Miyao (宮尾准教授)	Master or Ph.D Student	1	6 months	Fundamental knowledge about one of the following areas are required: 1. formal language theory, 2. statistical machine learning, or 3. syntactic/semantic theory
52	Natural Language Processing	Intelligent search engine for biomedical research papers http://www-tsujii.is.s.u-tokyo.ac.jp/medie/index.cgi	Assoc. Professor Yusuke Miyao (宮尾准教授)	Master or Ph.D Student	1	6 months	Fundamental skill of programming (C++, Java, or Python) is required
53	content-based image and video analysis	video and image semantic analysis and classification using local features (esp. TRECVID SIN task. see: http://www-nlpir.nist.gov/projects/trecvid/)	Professor Shin'ichi Satoh (佐藤真一教授) http://research.nii.ac.jp/~satoh	Master or Ph.D (Ph.D preferable)	3	more than 90 days (180 days preferable)	
54	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/)	Professor Shin'ichi Satoh (佐藤真一教授) http://research.nii.ac.jp/~satoh	Master or Ph.D (Ph.D preferable)		more than 90 days (180 days preferable)	
55	content-based image and video analysis	Event detection and action recognition (esp. TRECVID surveillance event detection and multimedia event detection task. see: http://www-nlpir.nist.gov/projects/trecvid/)	Professor Shin'ichi Satoh (佐藤真一教授) http://research.nii.ac.jp/~satoh	Master or Ph.D (Ph.D preferable)		more than 90 days (180 days preferable)	
56	content-based image and video analysis	Face Orientation Quantification for Face Sequence Indexing and Matching	Professor Shin'ichi Satoh (佐藤真一教授) http://research.nii.ac.jp/~satoh	Master or Ph.D (Ph.D preferable)		more than 90 days (180 days preferable)	
57	Computer Vision and Computer Graphics	Computational Photography: Image-based rendering, Image processing, Color analysis, Spectral imaging http://research.nii.ac.jp/~imarik	Assoc. Professor Imari Sato (佐藤いまり准教授)	Master and Ph.D. Stundets	2	5-6 months	A basic knowledge of computer graphics and good programming skills are required

58	Media security	Fundamental techniques and systems for media security http://research.nii.ac.jp/~iechizen/official/content_e.html	Assoc. Professor Isao Echizen (越前准教授)	Master / Ph.D Student	3	3-6 months	
59	Media security	Privacy in e-Health http://research.nii.ac.jp/~iechizen/official/content_e.html http://research.nii.ac.jp/~iechizen/official/content_e_sven.html	Assoc. Professor Isao Echizen (越前准教授)	Master / Ph.D Student		3-6 months	
60	Earth Environmental Informatics	Image processing and data integration for agriculture, biodiversity and climate change. http://agora.ex.nii.ac.jp/~kitamoto/education/internship/	Assoc. Professor Asanobu Kitamoto (北本准教授)	Master / Ph.D. (Ph.D preferrable)	3	3-6 months	Required is solid programming skills, and motivation for interdisciplinary research.
61	Emergency Information Systems	Aggregation, messaging, and stream processing for disasters and diseases. http://agora.ex.nii.ac.jp/~kitamoto/education/internship/	Assoc. Professor Asanobu Kitamoto (北本准教授)	Master / Ph.D. (Ph.D preferrable)	3	3-6 months	Required is solid programming skills, and motivation for interdisciplinary research.
62	Biological Imaging	Biological image processing for phenotype and brain activity analysis. http://agora.ex.nii.ac.jp/~kitamoto/education/internship/	Assoc. Professor Asanobu Kitamoto (北本准教授)	Master / Ph.D. (Ph.D preferrable)	3	3-6 months	Required is solid programming skills, and motivation for interdisciplinary research.
63	Digital Humanities	3D CG modeling, geographic information, semantic web, and multilingual processing for cultural heritage. http://agora.ex.nii.ac.jp/~kitamoto/education/internship/	Assoc. Professor Asanobu Kitamoto (北本准教授)	Master / Ph.D. (Ph.D preferrable)	3	3-6 months	Required is solid programming skills, and motivation for interdisciplinary research.

64	image / video coding	Distributed Source Coding for Interactive Multiview Video Streaming (http://research.nii.ac.jp/~cheung/intern.html)	Assist. Professor Gene Cheung (ジーン助教)	MS / PhD student	1	3-6 months	background image /video compression, programming skills in C, C++ required
65	video coding / streaming	Cooperative Caching for Interactive High-dimensional Media Streaming (http://research.nii.ac.jp/~cheung/intern.html)	Assist. Professor Gene Cheung (ジーン助教)	MS / PhD student	1	3-6 months	background in video compression standards, streaming protocols, programming skills in C, C++ required
66	video coding / streaming	error-resilient strategies for multiview video streaming over lossy networks (http://research.nii.ac.jp/~cheung/intern.html)	Assist. Professor Gene Cheung (ジーン助教)	MS / PhD student	1	3-6 months	background video compression standards, streaming protocols, programming skills in C, C++ required
67	Software Science	Context-Preserving Graph Query Languages http://research.nii.ac.jp/~kato	Assist. Professor Hiroyuki Kato (加藤助教)	Master and Ph.D Student	1	2 to 6 months	
68	Service-Oriented Computing, Cloud Computing, Ambient Computing	Quality-Assured Web/Ambient Services Composition and Delivery http://research.nii.ac.jp/~f-ishikawa/internships/index.html	Assist. Professor Fuyuki Ishikawa (石川助教)	Master / Ph.D	3	2-6 months	
69	Software Engineering, Formal Methods	Development of Formal Software Engineering Methods and Tools http://research.nii.ac.jp/~f-ishikawa/internships/index.html	Assist. Professor Fuyuki Ishikawa (石川助教)	Master / Ph.D		2-6 months	

70	Interaction analysis	Understanding multi-party interaction and its application (http://research.nii.ac.jp/~bono/research/internship-e.html)	Assist. Professor Mayumi Bono (坊農助教)	Master and Ph.D. Stundets	1	2-6 months	
71	Interaction analysis	Data collection and analysis of multimodal interaction (http://research.nii.ac.jp/~bono/research/internship-e.html)	Assist. Professor Mayumi Bono (坊農助教)	Master and Ph.D. Stundets	1	2-6 months	
72	Interaction analysis	Sign language communication and its community (http://research.nii.ac.jp/~bono/research/internship-e.html)	Assist. Professor Mayumi Bono (坊農助教)	Master and Ph.D. Stundets	1	2-6 months	
73	Interaction analysis	The use of Telecommunication technologies (http://research.nii.ac.jp/~bono/research/internship-e.html)	Assist. Professor Mayumi Bono (坊農助教)	Master and Ph.D. Stundets	1	2-6 months	

4. Information and Society Research Division							
74	Information Public Policy	Public Policy Issues on IPTV, High speed Broadband, or Ubiquitous Broadband. http://researchmap.jp/ueda/?lang=english	Assist. Professor Masashi Ueda (上田助教)	Master and Ph.D. students	3	Up to 6 months	I welcome both natural science and social science background students.
75	Information Public Policy	Network Economics, Copy Right, or Open Source Software. http://researchmap.jp/ueda/?lang=english	Assist. Professor Masashi Ueda (上田助教)	Master and Ph.D. students			I welcome both natural science and social science background students.
76	Information and Society	E-commerce & E-money user survey in Asian countries http://researchmap.jp/hokada/?lang=english	Assoc. Professor Hitoshi Okada (岡田准教授)	Master or Ph.D. student	1	2-6 months	

5. Collaborative Research Division							
77	Data Mining & Knowledge Discovery	Correlation-based Outlier Detection (http://research.nii.ac.jp/~meh/internship/intern-proj-outlier.doc)	Visiting Professor Michael Houle (フール客員教授)	Master and Ph.D. Stundets		5-6 months	
78	Data Mining & Knowledge Discovery	Unsupervised Feature Selection (http://research.nii.ac.jp/~meh/internship/intern-proj-features.doc)	Visiting Professor Michael Houle (フール客員教授)	Master and Ph.D. Stundets		5-6 months	
79	Data Mining & Knowledge Discovery	Multimodal Data Clustering (http://research.nii.ac.jp/~meh/internship/intern-proj-morsc.doc)	Visiting Professor Michael Houle (フール客員教授)	Master and Ph.D. Stundets		5-6 months	
80	Data Mining & Knowledge Discovery	Dynamic Query-Result Clustering (http://research.nii.ac.jp/~meh/internship/intern-proj-qclust.doc)	Visiting Professor Michael Houle (フール客員教授)	Master and Ph.D. Stundets	6	5-6 months	
81	Parallel and Distributed Computation	Distributed Data Clustering (http://research.nii.ac.jp/~meh/internship/intern-proj-pclust.doc)	Visiting Professor Michael Houle (フール客員教授)	Master and Ph.D. Stundets		5-6 months	
82	Databases	Cache-based Query Result Estimation (http://research.nii.ac.jp/~meh/internship/intern-proj-cache.doc)	Visiting Professor Michael Houle (フール客員教授)	Master and Ph.D. Stundets		5-6 months	
83	Data Structures & Algorithms	Rank-based Similarity Search (http://research.nii.ac.jp/~meh/internship/intern-proj-simrsearch.doc)	Visiting Professor Michael Houle (フール客員教授)	Master and Ph.D. Stundets		5-6 months	