List of Research topics for 2011 2nd call

							as of Sep. 20, 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. P	rinciples of Informatics R	esearch 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	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	
3	Quantum computation and communication	Quantum devices www.qis.ex.nii.ac.jp	Professor Kae Nemoto (根本教授)	Master / Ph.D Student	2	2-6 months	
4	Artificial Intelligence	Multi-variate time series analysis for disease outbreak detection from news	Assoc. Professor Nigel Collier (コリアー准教 授)	Both	2	5-6 months	The student will try to detect disease outbreak alerts using a variety of algorithms. The work extends "What's unusual in online disease outbreak news"
5	Artificial Intelligence	Text mining from Twitter messages	Assoc. Professor Nigel Collier (コリアー准教 授)	Both	2	5-6 months	
6	Artificial Intelligence	Named entity recognition in biology full texts	Assoc. Professor Nigel Collier (コリアー准教 授)	Both	2	5-6 months	

7	Applied Mathematics (Numerical Analysis)	Solution of underdetermined inverse problems and its application to pharmacokinetics etc. (http://researchmap.jp/KenHayami/?lang=english)	Professor Ken Hayami (速水教授)	Master/Ph.D.	1	3-6 months	Basic knowledge of numerical analysis and linear algebra is required.
8	Applied Mathematics (Numerical Analysis)	Iterative solution of large sparse systems of linear equations and least squares problems. (http://researchmap.jp/KenHayami/?lang=english)	Professor Ken Hayami (速水教授)	Master/Ph.D.	1	3-6 months	Basic knowledge of numerical analysis and linear algebra is required.
9	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 to 6 months	
10	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	3	4 to 6 months	
11	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		2-6 months	Basic knowledge of Artificial Intelligence and/or Bioinformatics is required.
12	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	3	2-6 months	Basic knowledge of Artificial Intelligence and/or Computer Science is required.
13	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.

14	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/mcfgplus2.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 of 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.
15	Computational Linguistics	Implementing Natural Language Semantics with Functional Programming http://research.nii.ac.jp/~kanazawa/Courses/2011/Seminar/ index.html	Assoc. Professor Makoto Kanazawa (金沢准教授)	Master's or Ph.D. students	2	3-6 months	Candidates should have rudimentary knowledge of natural language semantics, as found in, e.g., Heim and Kratzer's textbook. Previous experience with at least one programming language (not necessarily functional) is required.
16	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 to 6 months	
17	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 to 6 months	
18	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 to 6 months	

19	Intelligent robotics	Behavior Imitation on a Humanoid Robot http://web.iir.nii.ac.jp/lab/english/research/mimesis/	Assoc. Professor Tetsunari Inamura (稲邑准教授)	Master or Ph.D		3-6 months	Requred skill: writing software in C++
20	Intelligent robotics	Intelligent tele-operation system for network robots http://web.iir.nii.ac.jp/lab/english/research/adaptive-man-machine- interaction-based-on-stochastic-information-processing/	Assoc. Professor Tetsunari Inamura (稲邑准教授)	Master or Ph.D	4	3-6 months	Requred skill: writing software in C++
21	Intelligent robotics	Integration of Robot Simulation and Social Agent Simulation http://web.iir.nii.ac.jp/lab/english/research/elucidation-of-genesis-of-social-intelligence/	Assoc. Professor Tetsunari Inamura (稲邑准教授)	Master or Ph.D		3-6 months	Requred skill: writing software in C++
2. Ir	formation Systems Archi	itecture Science Research Division					
22	Interconnection Network	Interconection networks for many-core computer systems, http://research.nii.ac.jp/~koibuchi/english/	Assoc. Professor Michihiro Koibuchi (鯉渕准教授)	Master and Ph.D students	2	2-6months	
23	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	2	2 to 6 months	
24	Software Engineering	Co-Evolution of Models and Codes using Bidirectional Transformation (http://research.nii.ac.jp/~hu/project/intern.html)	Professor Zhenjiang Hu (胡教授)	Master/Ph.D Student		2-6 months	

25	Software Engineering	A Generic GUI for Supporting Bidirectional Model-driven Software Development(http://research.nii.ac.jp/~hu/project/intern.ht ml)	Professor Zhenjiang Hu (胡教授)	Master/Ph.D Student	2	2-6 months	
26	Parallel Programming	Systematic Parallel Programming using Hadoop(http://research.nii.ac.jp/~hu/project/intern.html)	Professor Zhenjiang Hu (胡教授)	Master/Ph.D Student	3	2-6 months	
27	Parallel Programming	Tree Computation with MapReduce (http://research.nii.ac.jp/~hu/project/intern.html)	Professor Zhenjiang Hu (胡教授)	Master/Ph.D Student		2-6 months	
28	Wireless control system	Autonomic Management of Wireless Control Systems (http://xac-project.jp/about/internship_e.html)	Assist. Professor Kenji Tei (鄭助教)	Master or Ph.D student	2	2 to 6 months	See the web site (http://xac- project.jp/about/internship_e.html)
29	Wireless control system	Model-driven Development for Wireless Control Systems (http://xac-project.jp/about/internship_e.html)	Assist. Professor Kenji Tei (鄭助教)	Master or Ph.D student	2	2 to 6 months	See the web site (http://xac- project.jp/about/internship_e.html)
30	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 to 6 months	

31	Computer network	Measurement and analysis of Internet traffic. Http://www.fukuda-lab.org	Assoc. Professor Kensuke Fukuda (福田准教授)	Ph.D and Master	1	5-6 months	
32	Computer network	Large-scale simulation for Interenet topology analysis. Http://www.fukuda-lab.org	Assoc. Professor Kensuke Fukuda (福田准教授)	Ph.D and Master	1	5-6 months	
33	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 or Ph.D student	up to 2* subject to availability of seats	3 or 6 months	Basic understanding on infrastructure- based and/or ad hoc wireless communication systems is expected
34	In-network processing	Implicit situation awareness of a wireless sensor network utilising channel quality estimations (https://klab.nii.ac.jp/~sigg/Implicit.pdf)	Assoc. Professor Yusheng Ji (計准教授)	Master student or above	up to 2* subject to availability of seats	4 – 6 months	<u>contact: sigg@nii.ac.jp</u>
35	Secure ad-hoc device pairing	Fuzzy cryptography for secure ad-hoc pairing of mobile devices (https://klab.nii.ac.jp/~sigg/Secure.pdf)	Assoc. Professor Yusheng Ji (計准教授)	Master student or above	up to 2* subject to availability of seats	4 – 6 months	<u>contact: sigg@nii.ac.jp</u>
36	In-network processing	Outsourcing mathematical operations in distributed processing to the wireless channel (https://klab.nii.ac.jp/~sigg/InNetwork.pdf)	Assoc. Professor Yusheng Ji (計准教授)	Master student or above	up to 2* subject to availability of seats	4 – 6 months	contact: sigg@nii.ac.jp

3. E	. Digital Content and Media Sciences Research Division									
37	Interaction analysis	Understanding multi-party interaction and its application (http://research.nii.ac.jp/~bono/en/aboutus/internship.html)	Assist. Professor Mayumi Bono (坊農助教)	Master and Ph.D. Students	1	2-6 months				
38	Interaction analysis	Data collection and analysis of multimodal interaction (http://research.nii.ac.jp/~bono/en/aboutus/internship.html)	Assist. Professor Mayumi Bono (坊農助教)	Master and Ph.D. Students	1	2-6 months				
39	Interaction analysis	Sign language communication and its community (http://research.nii.ac.jp/~bono/en/aboutus/internship.html)	Assist. Professor Mayumi Bono (坊農助教)	Master and Ph.D. Students	1	2-6 months				
40	Interaction analysis	The use of Telecommunication technologies (http://research.nii.ac.jp/~bono/en/aboutus/internship.html)	Assist. Professor Mayumi Bono (坊農助教)	Master and Ph.D. Students	1	2-6 months				
41	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			
42	Natural Language Processing	Intelligent search engine for biomedical research papers	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			

43	content-based image and video analysis	video and image semantic analysis and classification using local features (esp. TRECVID HLF 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	
44	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	
45	content-based image and video analysis	"Beyond Content Based Copy Detection," explore potential video mining applications	Professor Shin'ichi Satoh (佐藤真一教授) http://research.nii.ac.jp/~satoh	Master or Ph.D (Ph.D preferable)	5	more than 90 days	
46	content-based image and video analysis	Event detection and action recognition (esp. TRECVID 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	
47	content-based image and video analysis	Face Sequence Indexing and Matching for Broadcast Videos	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	
48	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 to 6 month	A basic knowledge of computer graphics and good programming skills are required

49	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	2	3 to 6 months	
50	Privacy in Business Processes (extending by resilience)	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	3 to 6 months	
51	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)	ph D students	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.
52	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.
53	signal processing / networking	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 / Ph.D.	1	3-6months	strong computer programming skills in C / C++. Familarity with network simulators like ns-3, QualNet.
54	signal processing	Region-of-Interest-based Video Coding using Visual Saliency Map Analysis (http://research.nii.ac.jp/~cheung/intern.html)	Assist. Professor Gene Cheung (ジーン助教)	MS / Ph.D.	1	3-6months	strong computer programming skills in C / C++. Familarity with video compression standards like H.263, H.264.

55	3D Internet and Virtual Worlds (Foundations)	R&D in the Foundations of the 3D Internet (Unity3D), incl. networking for massively multi-user interaction 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.
56	3D Internet and Virtual Worlds (Serious Games)	Application-oriented reserarch in the Unity3D, esp. "serious games" for 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	6 (total)	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.
57	3D Internet and Virtual Worlds (Green ITS)	OpenEnergySim: an open source platform for exploring "Green ITS" (Intelligent Transport System) and eco- driving in the Unity3D 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/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.
58	Service-Oriented Computing, Cloud Computing, Ambient Computing	Quality-Assured Integration and Delivery of Web/Ambient Services http://research.nii.ac.jp/~f-ishikawa/internships/index.html	Assist. Professor Fuyuki Ishikawa (石川助教)	Master / Ph.D	2	2-6 months	
59	Software Engineering, For	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	5	2-6 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/ind ex.html.en	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/ind ex.html.en	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/ind ex.html.en	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/ind ex.html.en	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	Software Science	Context-Preserving Graph Query Languages http://research.nii.ac.jp/~kato	Assist. Professor Hiroyuki Kato (加藤助教)	Master/Ph.D Student	1	2-6 months	
65	Software Science	Incremental Graph View Maintenance http://research.nii.ac.jp/~kato	Assist. Professor Hiroyuki Kato (加藤助教)	Master/Ph.D Student	1	2-6 months	
4. Ir	formation and Society R	esearch Division		<u> </u>		l	
66	Information Public Policy	Socio-economic issues on network economics, SNS, open source software, information security. See in detail on http://researchmap.jp/ueda/?lang=english.	Assist. Professor Masashi Ueda (上田助教)	Master and Ph.D. students	3	2-5 months	I welcome both natural science and social science background students.

67	Information Public Policy	Critical Success Factors of Electronic Commerce and Facebook Commerce	Assoc. Professor Hisashi Okada (岡田准教授)	Master / Ph.D Student	2	2-6 months	Those who are interested in consumer's behavior, social impact, public policy of IT-enabled services are welcome. Statistical knowledge is highly appreciated.
68	Information Public Policy	Interactive Educational Material for Information Security and ICT-Resilience	Assoc. Professor Hisashi Okada (岡田准教授)	Master / Ph.D Student	2	2-6 months	We are planning to produce an Educational Material for International Students who study in Japan. Your cooperation is appreciated.
5. C	ollaborative Research Div	vision					
69	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	
70	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	
71	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	
72	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	
73	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	

74	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	
75	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	