




## Takako Fujioka

Associate Professor of Music

 Curriculum Vitae available Online

### Bio

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#### BIO

Research topics include neural oscillations for auditory perception, auditory-motor coupling, brain plasticity in development and aging, and recovery from stroke with music-supported therapy.

Her post-doctoral and research-associate work at Rotman Research Institute in Toronto was supported by awards from the Canadian Institutes of Health Research. Her research continues to explore the biological nature of human musical ability by examining brain activities with non-invasive human neurophysiological measures such as magnetoencephalography (MEG) and electroencephalography (EEG).

#### ACADEMIC APPOINTMENTS

- Associate Professor, Music
- Member, Bio-X
- Faculty Affiliate, Institute for Human-Centered Artificial Intelligence (HAI)
- Member, Wu Tsai Neurosciences Institute

#### ADMINISTRATIVE APPOINTMENTS

- Associate Professor, Center for Computer Research in Music and Acoustics, Department of Music, Stanford University, (2019- present)
- Assistant Professor, Center for Computer Research in Music and Acoustics, Department of Music, Stanford University, (2012-2019)
- Scientific associate, Rotman Research Institute, (2010-2012)
- Research associate, Communication & Information Laboratory, Dai Nippon Printing Company, (1993-2000)
- Visiting Academic Fellow at the MEG lab, Rotman Research Institute, (2001-2003)
- Instructor, Developmental Neurophysiology, Department of Psychology, University of Toronto Mississauga, (2008-2008)
- Instructor, National Institute for Physiological Sciences, (2001-2001)
- Teaching assistant, Department of Electrical Engineering, Waseda University, (1992-1993)

#### HONORS AND AWARDS

- Piano performance Certificate Grade 10 First Class with Distinction, Royal Conservatory of Music (2016)
- Research Fellow supported by Centre for Stroke Recovery at Baycrest, Rotman Research Institute at Baycrest (2008-2009)
- Research Fellow, McMaster University (2007-2009)
- One of the top 10 articles on early childhood development, Centre of Excellence for Early Childhood Development (CEEDEC) (2007)
- One of top 50 discoveries of 2006, Natural Sciences and Engineering Research Council of Canada (2006)

- Post-doctoral Fellowship Award, Canadian Institutes of Health Research (2004-2007)
- Post-doctoral Research Fellow, University of Toronto (2003-2004)
- PhD-scholarship award, The Japan Scholarship Foundation (2000-2003)
- Finalist at The PTNA Piano Competition, National Piano Teachers' Association of Japan (1980)

## **BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS**

- Reviewer, Psychomusicology (2012 - present)
- CIHR Grant competition External reviewer, Canadian Institutes of Health Research grant competition (2012 - present)
- SSHRC Grant competition External Review, Social Sciences and Humanities Research Council (2014 - present)
- National Science Foundation Grant Competition External Review, National Science Foundation (2013 - present)
- Member, Internal review committee for grant proposals, Stanford University (2010 - 2012)
- Session chair, Society for Music perception and cognition meeting (2013 - 2013)
- Consultant for stroke rehabilitation research project and data sharing agreement transaction, Stanford, Rotman Research Institute, Sunnybrook Hospital (2012 - 2013)
- Reviewer, PlosONE (2012 - 2013)
- Reviewer, Psychophysiology (2012 - 2013)
- Reviewer, Frontiers in Human Neuroscience (2012 - 2013)
- Reviewer, Frontiers in Systems Neuroscience (2012 - 2013)
- Reviewer, Brain Research (2012 - 2013)
- Reviewer, Cortex (2012 - 2013)
- Reviewer, Psychology of music, mind and brain (2012 - 2013)
- Reviewer, Journal of Neuroscience (High Wire Press, Society of Neuroscience)
- Reviewer, Cerebral Cortex (Oxford Journals)
- Reviewer, PLoSOne (The Public Library of Science)
- Reviewer, Journal of Cognitive Neuroscience (MIT press)
- Reviewer, European Journal of Neuroscience (Springer)
- Reviewer, The Journal of the Acoustical Society of America (the Acoustical Society of America)
- Reviewer, Progress in Neurobiology
- Reviewer, Neuroscience
- Reviewer, Neuroscience Letters
- Reviewer, Brain Research
- Reviewer, Clinical Neurophysiology
- Reviewer, Neuroscience Research
- Reviewer, Brain and Cognition (Elsevier)
- Reviewer, Ear and Hearing (Lippincott Williams & Wilkins)
- Reviewer, Music Perception (University of California Press)
- Reviewer, Psychology of Music
- Reviewer, Review of Educational Research (Sage)
- Reviewer, BMC Neuroscience (Biomed Central)
- Member, Society for Music Perception and Cognition (2013 - present)

- Member, The Society of Neuroscience
- Member, Cognitive Neuroscience Society

## PROFESSIONAL EDUCATION

- Ph.D., Department of Physiological Science, School of Life Science, Graduate University for Advanced Studies, Department of Integrative Physiology, National Institute for Physiological Sciences , Physiology (2003)
- M.Sc., Department of Electrical Engineering, Graduate School of Science and Engineering, Waseda University , Information System Engineering (1993)
- B.Eng, Department of Electrical Engineering, School of Science and Engineering, Waseda University , System Engineering (1990)

## PATENTS

- Takako Fujioka. "United States Patent 2000-003360 Document analysis systems", Dai Nippon Printing Company
- Takako Fujioka. "United States Patent 2000-003361 Document analysis systems", Dai Nippon Printing Company
- Takako Fujioka. "United States Patent 2000-003362 Document analysis systems," , Dai Nippon Printing Company
- Takako Fujioka. "United States Patent 2000-259670 Document analysis systems", Dai Nippon Printing Company
- Takako Fujioka. "United States Patent 2000-259671 Information formation system, Information retrieval system and record medium", Dai Nippon Printing Company

## Teaching

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### COURSES

#### 2023-24

- Auditory EEG Research III: Coordinated Actions and Hyperscanning: MUSIC 451C (Win)
- Basics in Auditory and Music Neuroscience: MUSIC 451A (Aut)
- Psychophysics and Music Cognition: MUSIC 251 (Win)
- Seminar in Music Perception and Cognition I: MUSIC 351A (Aut)

#### 2022-23

- Basics in Auditory and Music Neuroscience: MUSIC 451A (Aut)
- Neuroscience of Auditory Perception and Music Cognition II: Neural Oscillations: MUSIC 451B (Win)
- Psychophysics and Music Cognition: MUSIC 251 (Win)
- Seminar in Music Perception and Cognition I: MUSIC 351A (Aut)

#### 2021-22

- Auditory EEG Research III: Coordinated Actions and Hyperscanning: MUSIC 451C (Win)
- Basics in Auditory and Music Neuroscience: MUSIC 451A (Aut)
- Psychophysics and Music Cognition: MUSIC 251 (Spr)
- Seminar in Music Perception and Cognition I: MUSIC 351A (Aut)

#### 2020-21

- Basics in Auditory and Music Neuroscience: MUSIC 451A (Win)
- Psychophysics and Music Cognition: MUSIC 251 (Aut, Win)
- Seminar in Music Perception and Cognition I: MUSIC 351A (Aut)

## STANFORD ADVISEES

Anna Gruzdas

### Doctoral Dissertation Reader (AC)

Kunwoo Kim

**Doctoral Dissertation Advisor (AC)**

Barbara Nerness, Vidya Rangasayee, Marise van Zyl

**Master's Program Advisor**

Taylor Goss, Richard Lee, Becca Wroblewski, Spark Wu, Julia Yu

**Doctoral (Program)**

Vidya Rangasayee, Marise van Zyl

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## Publications

### PUBLICATIONS

- **Replicability of neural responses to speech accent is driven by study design and analytical parameters.** *Scientific reports*  
Strauber, C. B., Ali, L. R., Fujioka, T., Thille, C., McCandliss, B. D.  
2021; 11 (1): 4777
- **Temporal Coordination in Piano Duet Networked Music Performance (NMP): Interactions Between Acoustic Transmission Latency and Musical Role Asymmetries.** *Frontiers in psychology*  
Washburn, A., Wright, M. J., Chafe, C., Fujioka, T.  
2021; 12: 707090
- **Expressing melodic grouping discontinuities: Evidence from violinists' rubato and motion** *MUSICAE SCIENTIAE*  
Huberth, M., Davis, S., Fujioka, T.  
2020; 24 (4): 494–514
- **Central auditory processing in adults with chronic stroke without hearing loss: a magnetoencephalography study** *Clinical Neurophysiology*  
Fujioka, T., Freigang, C., Honjo, K., Chen, J. J., Chen, J. L., Black, S. E., Stuss, D. T., Dawson, D. R., Ross, B.  
2020
- **Predictability of higher-order temporal structure of musical stimuli is associated with auditory evoked response.** *International journal of psychophysiology : official journal of the International Organization of Psychophysiology*  
Dauer, T. n., Nerness, B. n., Fujioka, T. n.  
2020
- **Induced Beta Power Modulations during Isochronous Auditory Beats Reflect Intentional Anticipation before Gradual Tempo Changes.** *Scientific reports*  
Graber, E. n., Fujioka, T. n.  
2020; 10 (1): 4207
- **Performance monitoring of self and other in a turn-taking piano duet: A dual-EEG study** *SOCIAL NEUROSCIENCE*  
Huberth, M., Dauer, T., Nanou, C., Roman, I., Gang, N., Reid, W., Wright, M., Fujioka, T.  
2019; 14 (4): 449–61
- **Auditory rhyme processing in expert freestyle rap lyricists and novices: An ERP study** *NEUROPSYCHOLOGIA*  
Cross, K., Fujioka, T.  
2019; 129: 223–35
- **Endogenous Expectations for Sequence Continuation after Auditory Beat Accelerations And Decelerations Revealed by P3a and Induced Beta-Band Responses.** *Neuroscience*  
Graber, E. n., Fujioka, T. n.  
2019
- **Delayed feedback embedded in perception-action coordination cycles results in anticipation behavior during synchronized rhythmic action: A dynamical systems approach.** *PLoS computational biology*  
Roman, I. R., Washburn, A. n., Large, E. W., Chafe, C. n., Fujioka, T. n.  
2019; 15 (10): e1007371

- **Effects of extramusical information and human presence on perceived emotion intensity in electronic music** *Psychomusicology: Music, Mind, and Brain*  
Grace, V., Huberth, M., Fujioka, T.  
2019; 29 (2-3): 117–127
- **Musical Role Asymmetries in Piano Duet Performance Influence Alpha-Band Neural Oscillation and Behavioral Synchronization.** *Frontiers in neuroscience*  
Washburn, A., Roman, I., Huberth, M., Gang, N., Dauer, T., Reid, W., Nanou, C., Wright, M., Fujioka, T.  
2019; 13: 1088
- **Effects of Visual Predictive Information and Sequential Context on Neural Processing of Musical Syntax.** *Frontiers in psychology*  
Shin, H., Fujioka, T.  
2018; 9: 2528
- **Variability in stroke motor outcome is explained by structural and functional integrity of the motor system** *SCIENTIFIC REPORTS*  
Lam, T. K., Binns, M. A., Honjo, K., Dawson, D. R., Ross, B., Stuss, D. T., Black, S. E., Chen, J., Fujioka, T., Chen, J. L.  
2018; 8: 9480
- **The effects of music-supported therapy on motor, cognitive, and psychosocial functions in chronic stroke.** *Annals of the New York Academy of Sciences*  
Fujioka, T., Dawson, D. R., Wright, R., Honjo, K., Chen, J. L., Chen, J. J., Black, S. E., Stuss, D. T., Ross, B.  
2018
- **PERFORMERS' MOTIONS REFLECT THE INTENTION TO EXPRESS SHORT OR LONG MELODIC GROUPINGS** *MUSIC PERCEPTION*  
Huberth, M., Fujioka, T.  
2018; 35 (4): 437–53
- **Neural coupling between contralesional motor and frontoparietal networks correlates with motor ability in individuals with chronic stroke.** *Journal of the neurological sciences*  
Lam, T. K., Dawson, D. R., Honjo, K. n., Ross, B. n., Binns, M. A., Stuss, D. T., Black, S. E., Chen, J. J., Levine, B. T., Fujioka, T. n., Chen, J. L.  
2018; 384: 21–29
- **Beta-band oscillations during passive listening to metronome sounds reflect improved timing representation after short-term musical training in healthy older adults.** *The European journal of neuroscience*  
Fujioka, T., Ross, B.  
2017; 46 (8): 2339-2354
- **Sound-making actions lead to immediate plastic changes of neuromagnetic evoked responses and induced beta-band oscillations during perception.** *journal of neuroscience*  
Ross, B., Barat, M., Fujioka, T.  
2017
- **Neural representation of a melodic motif: Effects of polyphonic contexts** *BRAIN AND COGNITION*  
Huberth, M., Fujioka, T.  
2017; 111: 144-155
- **40-Hz oscillations underlying perceptual binding in young and older adults.** *Psychophysiology*  
Ross, B., Fujioka, T.  
2016; 53 (7): 974-990
- **Beta-Band Oscillations Represent Auditory Beat and Its Metrical Hierarchy in Perception and Imagery** *JOURNAL OF NEUROSCIENCE*  
Fujioka, T., Ross, B., Trainor, L. J.  
2015; 35 (44): 15187-15198
- **Beta-Band Oscillations Represent Auditory Beat and Its Metrical Hierarchy in Perception and Imagery.** *The Journal of neuroscience : the official journal of the Society for Neuroscience*  
Fujioka, T., Ross, B., Trainor, L. J.  
2015; 35 (45): 15187-98
- **Neural correlates of intentional switching from ternary to binary meter in a musical hemiola pattern** *FRONTIERS IN PSYCHOLOGY*  
Fujioka, T., Fidali, B. C., Ross, B.  
2014; 5

- **Neural correlates of intentional switching from ternary to binary meter in a musical hemiola pattern.** *Frontiers in psychology*  
Fujioka, T., Fidalì, B. C., Ross, B.  
2014; 5: 1257
- **Human cortical responses to slow and fast binaural beats reveal multiple mechanisms of binaural hearing** *JOURNAL OF NEUROPHYSIOLOGY*  
Ross, B., Miyazaki, T., Thompson, J., Jamali, S., Fujioka, T.  
2014; 112 (8): 1871-1884
- **Human cortical responses to slow and fast binaural beats reveal multiple mechanisms of binaural hearing.** *Journal of neurophysiology*  
Ross, B., Miyazaki, T., Thompson, J., Jamali, S., Fujioka, T.  
2014; 112 (8): 1871-84
- **Beat-induced fluctuations in auditory cortical beta-band activity: using EEG to measure age-related changes** *FRONTIERS IN PSYCHOLOGY*  
Cirelli, L. K., Bosnyak, D., Manning, F. C., Spinelli, C., Marie, C., Fujioka, T., Ghahremani, A., Trainor, L. J.  
2014; 5
- **Neuromagnetic beta and gamma oscillations in the somatosensory cortex after music training in healthy older adults and a chronic stroke patient.** *Clinical neurophysiology*  
Jamali, S., Fujioka, T., Ross, B.  
2014; 125 (6): 1213-1222
- **Beat-induced fluctuations in auditory cortical beta-band activity: using EEG to measure age-related changes.** *Frontiers in psychology*  
Cirelli, L. K., Bosnyak, D., Manning, F. C., Spinelli, C., Marie, C., Fujioka, T., Ghahremani, A., Trainor, L. J.  
2014; 5: 742-?
- **Synchronization of beta and gamma oscillations in the somatosensory evoked neuromagnetic steady-state response** *EXPERIMENTAL NEUROLOGY*  
Ross, B., Jamali, S., Miyazaki, T., Fujioka, T.  
2013; 245: 40-51
- **Sound envelope encoding in the auditory cortex revealed by neuromagnetic responses in the theta to gamma frequency bands** *BRAIN RESEARCH*  
Miyazaki, T., Thompson, J., Fujioka, T., Ross, B.  
2013; 1506: 64-75
- **Introduction to The neurosciences and music IV: learning and memory.** *Annals of the New York Academy of Sciences*  
Altenmüller, E., Demorest, S. M., Fujioka, T., Halpern, A. R., Hannon, E. E., Loui, P., MAJNO, M., Oechslin, M. S., Osborne, N., Overy, K., PALMER, C., Peretz, I., Pfordresher, et al  
2012; 1252: 1-16
- **Internalized Timing of Isochronous Sounds Is Represented in Neuromagnetic Beta Oscillations** *JOURNAL OF NEUROSCIENCE*  
Fujioka, T., Trainor, L. J., Large, E. W., Ross, B.  
2012; 32 (5): 1791-1802
- **Changes in neuromagnetic beta-band oscillation after music-supported stroke rehabilitation** *Conference on Neurosciences and Music-IV - Learning and Memory*  
Fujioka, T., Ween, J. E., Jamali, S., Stuss, D. T., Ross, B.  
BLACKWELL SCIENCE PUBL.2012: 294-304
- **Interference in dichotic listening: the effect of contralateral noise on oscillatory brain networks** *EUROPEAN JOURNAL OF NEUROSCIENCE*  
Ross, B., Miyazaki, T., Fujioka, T.  
2012; 35 (1): 106-118
- **THE EFFECTS OF STIMULUS RATE AND TAPPING RATE ON TAPPING PERFORMANCE** *MUSIC PERCEPTION*  
Zendel, B. R., Ross, B., Fujioka, T.  
2011; 29 (1): 65-78
- **Development of auditory-specific brain rhythm in infants** *EUROPEAN JOURNAL OF NEUROSCIENCE*  
Fujioka, T., Mourad, N., Trainor, L. J.  
2011; 33 (3): 521-529
- **Comparison of artifact correction methods for infant EEG applied to extraction of event-related potential signals** *CLINICAL NEUROPHYSIOLOGY*

- Fujioka, T., Mourad, N., He, C., Trainor, L. J.  
2011; 122 (1): 43-51
- **Endogenous Neuromagnetic Activity for Mental Hierarchy of Timing** *JOURNAL OF NEUROSCIENCE*  
Fujioka, T., Zendel, B. R., Ross, B.  
2010; 30 (9): 3458-3466
  - **Beta and Gamma Rhythms in Human Auditory Cortex during Musical Beat Processing** *Conference on the Neurosciences and Music III*  
Fujioka, T., Trainor, L. J., Large, E. W., Ross, B.  
WILEY-BLACKWELL.2009: 89-92
  - **Neural Representation of Transposed Melody in Infants at 6 Months of Age** *Conference on the Neurosciences and Music III*  
Tew, S., Fujioka, T., He, C., Trainor, L.  
WILEY-BLACKWELL.2009: 287-290
  - **Auditory processing indexed by stimulus-induced alpha desynchronization in children** *INTERNATIONAL JOURNAL OF PSYCHOPHYSIOLOGY*  
Fujioka, T., Ross, B.  
2008; 68 (2): 130-140
  - **Simultaneous pitches are encoded separately in auditory cortex: an MMNm study** *NEUROREPORT*  
Fujioka, T., Trainor, L. J., Ross, B.  
2008; 19 (3): 361-366
  - **Dynamics of thalamocortical circuits for sound processing revealed by magnetoencephalography** *The Journal of the Acoustical Society of America*  
Fujioka, T.  
2008; 124 (4): 2448
  - **Time courses of cortical beta and gamma-band activity during listening to metronome sounds in different tempi** *The Journal of the Acoustical Society of America*  
Fujioka, T.  
2008; 124 (4): 2432
  - **Aging in binaural hearing begins in mid-life: Evidence from cortical auditory-evoked responses to changes in interaural phase** *JOURNAL OF NEUROSCIENCE*  
Ross, B., Fujioka, T., Tremblay, K. L., Picton, T. W.  
2007; 27 (42): 11172-11178
  - **Magnetoencephalographic study: Muscical cognition in auditory cortex** *Shinkei naika*  
Fujioka, T.  
2007; 66 (6)
  - **One year of musical training affects development of auditory cortical-evoked fields in young children** *BRAIN*  
Fujioka, T., Ross, B., Kakigi, R., Pantev, C., Trainor, L. J.  
2006; 129: 2593-2608
  - **Cortical oscillations related to processing congruent and incongruent grapheme-phoneme pairs** *NEUROSCIENCE LETTERS*  
Herdman, A. T., Fujioka, T., Chau, W., Ross, B., Pantev, C., Picton, T. W.  
2006; 399 (1-2): 61-66
  - **Music cognition in the auditory cortex by magnetoencephalography** *Clinical Neuroscience*  
Fujioka, T., Kakigi, R.  
2006; 24 (10)
  - **Sound discrimination in the auditory cortex by magnetoencephalography** *Clinical Neuroscience*  
Fujioka, T., Kakigi, R.  
2006; 24 (8)
  - **Automatic encoding of polyphonic melodies in musicians and nonmusicians** *JOURNAL OF COGNITIVE NEUROSCIENCE*  
Fujioka, T., Trainor, L. J., Ross, B., Kakigi, R., Pantev, C.  
2005; 17 (10): 1578-1592

- **Music recognition starts in the auditory cortex** *Rinsho-noha*  
Fujioka, T., Kakigi, R.  
2005
- **Musical training enhances automatic encoding of melodic contour and interval structure** *JOURNAL OF COGNITIVE NEUROSCIENCE*  
Fujioka, T., Trainor, L. J., Ross, B., Kakigi, R., Pantev, C.  
2004; 16 (6): 1010-1021
- **Static and dynamic representation of complex sounds: from tonotopy to musical notes** *Proceedings in the 14th international conference on biomagnetism*  
Fujioka, T., Trainor, L. J., Ross, B., Kakigi, R., Pantev, C.  
2004: 26
- **Auditory memory trace encodes polyphonic melody in musician** *Proceedings in the 8th International Conference on Music Perception and Cognition (CD-ROM)*  
Fujioka, T., Trainor, L. J., Ross, B., Kakigi, R., Pantev, C.  
2004
- **Cortical oscillations modulated by congruent and incongruent audiovisual stimuli.** *Neurology & clinical neurophysiology : NCN*  
Herdman, A. T., Fujioka, T., Chau, W., Ross, B., Pantev, C., PICTON, T. W.  
2004; 2004: 15-?
- **Cortical oscillations modulated by congruent and incongruent audiovisual stimuli** *Proceedings in the 14th international conference on biomagnetism*  
Herdman, A. T., Fujioka, T., Chau, W., Ross, B., Pantev, C., Picton, T. W.  
2004: 284–285
- **Auditory Memory Trace Encodes Polyphonic Melody** *Proceedings in the 14th international conference on biomagnetism*  
Fujioka, T., Trainor, L. J., Ross, B., Kakigi, R., Pantev, C.  
2004: 501–502
- **Tonotopic representation of missing fundamental complex sounds in the human auditory cortex** *EUROPEAN JOURNAL OF NEUROSCIENCE*  
Fujioka, T., Ross, B., Okamoto, H., Takeshima, Y., Kakigi, R., Pantev, C.  
2003; 18 (2): 432-440
- **Music and learning-induced cortical plasticity** *Conference on Neurosciences and Music: Mutual Interactions and Implications on Developmental Functions*  
Pantev, C., Ross, B., Fujioka, T., Trainor, L. J., Schulte, M., Schulz, M.  
NEW YORK ACAD SCIENCES.2003: 438–450
- **Cortical representation of pitch, contour, and interval changes of melodies** *Proceedings in the 13th international conference on biomagnetism*  
Fujioka, T., Trainor, L. J., Ross, B., Kakigi, R., Pantev, C.  
2002
- **Cortical representation of pitch and timbre of the missing fundamental of complex sounds** *Proceedings in the 13th international conference on biomagnetism*  
Fujioka, T., Okamoto, H., Takeshima, Y., Kakigi, R.  
edited by Nowak, H., Haueisen, J., Giessler, F., Hounker, R.  
2002: 62–64
- **The auditory evoked magnetic fields to very high frequency tones** *NEUROSCIENCE*  
Fujioka, T., Kakigi, R., Gunji, A., Takeshima, Y.  
2002; 112 (2): 367-381
- **The auditory evoked magnetic fields to very high frequency tones** *Proceedings in the 16th Japanese Biomagnetism conference*  
Fujioka, T., Kakigi, R., Gunji, A., Takeshima, Y.  
edited by Keiji, I., Ikehata, M.  
2001: 204–5
- **SGML Document Structurization based by Categorical Relation of Semantic Value of the Words** *The 5th Annual Meeting of The Association for Natural Language Processing*  
Fujioka, T.  
1999: 397–398



- **Document Structurization by Index belong to the Multiple Categories** *The 12th Annual Conference of Japanese Society for Artificial Intelligence*  
Fujioka, T.  
1998
  
- **Parallelization Technique for Quasi-Destructive Graph Unification Algorithm** *Special Interest Group on Natural Language, Processing of the Information Processing Society of Japan*  
Fujioka, T., Tomabechi, H., Furuse, O., Lida, H.  
1990