Takashi Okuma, Ph.D.

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Work Experience

- Jan. 2003 – present. Visiting Scientist
  Department of Computer Science, **Columbia University,** New York, NY, USA

  Research Project:

  "Augmented Reality Environment Authoring System with Collecting Information of Real Environment" (Supported by Japan Society for the Promotion of Science: Postdoctoral Fellowships for Research Abroad)

- Apr. 1999-present. Research Scientist
  Information Technology Research Institute, **National Institute of Advanced Industrial Science and Technology (AIST)**, Tsukuba, Ibaraki, JAPAN

  Research Projects:

  - "Real World Computing (RWC) Program" of METI of the Japanese Government.
    Contributed on development of a wearable vision system and the final demonstration.

  - "Distributed Real-time Network Techniques for Human Support," Special Coordination Funds for Promoting Science and Technology of MEXT of the Japanese Government.
    Contributed on development of an object tracking system and the interim demonstration.

  Other Contribution:

  - A member of the 2002 Open House Committee of the intelligent systems institute of AIST.

- Apr. 1998-Mar.1999 Part-time lecturer
  Osaka Shoin Women's University, Higashi-Osaka, Osaka, Japan

Education

- Apr. 1994 – Mar. 1999
  Graduate School of Information Science, **Nara Institute of Science and Technology (NAIST),** Ikoma, Nara, JAPAN.

  Degrees:

  Doctor of Philosophy (Mar. 1999)
  Thesis Title: "A Method for Browsing Information Using 3D Interface and Augmented Reality"

  Master of Engineering (Mar. 1996)
  Thesis Title: "Spiral Tree: A 3D Visualization of Hierarchical Ordered Information"

- Apr. 1991-Mar.1994.
  Osaka University, Toyonaka, Osaka, JAPAN.

Research Interest

Augmented Reality, Vision-based User Interfaces, Natural feature-based real object recognition/tracking, Image processing.

Computer Skills

Programming Languages:
C++, C, Pascal.

Graphics/Tools/Libraries:
VRML, OpenGL, Open Inventor, OpenCV, Intel Integrated Performance Primitives

Operating Systems:
Windows, UNIX

Publication List (English publication only)

- Takashi Okuma, Takeshi Kurata, and Katsuhiko Sakaue: "A Natural Feature-Based 3D Object Tracking Method for Wearable Augmented Reality", In **Proc. the 8th IEEE International Workshop on Advanced Motion Control (AMC'04)**, pp.451-456, Mar. 2004

- Takashi Okuma, Takeshi Kurata, and Katsuhiko Sakaue, "Fiducial-less 3-D Object Tracking in AR Systems Based on the Integration of Top-down and Bottom-up Approaches and Automatic Database Addition", In **Proc. the Second International Symposium on Mixed and Augmented Reality (ISMAR03),** pp.342-343, Oct. 2003

- Takashi Okuma, Takeshi Kurata, and Katsuhiko Sakaue: "VizWear-3D: A Wearable 3-D Annotation System Based on 3-D Object Tracking using a Condensation Algorithm", In **Proc. IEEE Virtual Reality (IEEE VR 2002),** pp.295-296, Mar. 2002

- Takashi Okuma, Takeshi Kurata, and Katsuhiko Sakaue: "Real-Time Camera Parameter Estimation for 3-D Annotation on a Wearable Vision System", **IEICE Transaction of Information & Systems**, Vol.E84-D, No.12, pp.1668-1675, Dec. 2001

- Takeshi Kurata, Takashi Okuma, Masakatsu Kourogi, Takekazu Kato, and Katsuhiko Sakaue: "VizWear: Toward Human-Centered Interaction through Wearable Vision and Visualization", In **Proc. The Second IEEE Pacific-Rim Conference on Multimedia (PCM2001),** pp.40-47. Oct. 2001 (invited)

- Takeshi Kurata, Takashi Okuma, Masakatsu Kourogi, and Katsuhiko Sakaue: "The Hand Mouse: GMM Hand Color Classification and Mean Shift Tracking", In **Proc. Second International Workshop on Recognition, Analysis and Tracking of Faces and Gestures in Real-time Systems (RATFG-RTS 2001)** in conjunction with ICCV 2001, pp.119-124, July 2001

- Takashi Okuma, Takeshi Kurata, and Katsuhiko Sakaue: "3-D annotation of images captured from a wearer's camera based on object recognition", In **Proc. International Symposium on Mixed Reality (ISMR 2001)**, pp.184-185, Mar. 2001

- Takeshi Kurata, Takashi Okuma, Masakatsu Kourogi, and Katsuhiko Sakaue: "The Hand-mouse: A Human Interface Suitable for Augmented Reality Environments Enabled by Visual Wearables", In **Proc. International Symposium on Mixed Reality (ISMR 2001)**, pp.188-189, Mar. 2001

- Takashi Okuma, Takeshi Kurata, and Katsuhiko Sakaue: "Real-Time Camera Parameter Estimation from Images for a Wearable Vision System", In **Proc. IAPR Workshop on Machine Vision Applications (MVA 2000)**, pp.83-86, Nov.2000

- Takashi Okuma, Katsuhiko Sakaue, Haruo Takemura, Naokazu Yokoya: "Real-Time Camera Parameter Estimation from Images for a Mixed Reality System." In **Proc. International Conference on Pattern Recognition (ICPR 2000)**, pp. 4482-4486, Sep. 2000

- Masayuki Kanbara, Takashi Okuma, Haruo Takemura, Naokazu Yokoya: "A Stereoscopic Video See-through Augmented Reality System Based on Realtime Vision-based Registration", In **Proc. IEEE Virtual Reality 2000 International Conference**, pp. 255-262, Mar. 2000

- Masayuki Kanbara, Takasi Okuma, Haruo Takemura and Naokazu Yokoya: "Real-time Composition of Stereo Images for Video See-through Augmented Reality," In **Proc. IEEE International Conference on Multimedia Computing and Systems (ICMCS'99)**, pp. 213-219, June 1999

- Naokazu Yokoya, Haruo Takemura, Takashi Okuma and Masayuki Kanbara: "Stereo Vision Based Video See-through Mixed Reality," In **Proc. The First International Symposium on Mixed Reality (ISMR'99)**, pp.131-145, Mar. 1999.

- Takashi Okuma, Kiyoshi Kiyokawa, Haruo Takemura and Naokazu Yokoya: "An Augmented Reality System Using a Real-Time Vision Based Registration", In **Proc. 14th International Conference on Pattern Recognition (ICPR'98)**, pp.1226-1229, Aug. 1998

- T. Okuma, H. Takemura, Y. Katayama, H. Iwasa, and N. Yokoya: "3D visualization of hierarchical ordered information: Spiral Trees", In **Proc. 1st International Conference on Applied Ergonomics (ICAE'96),** pp. 668-671, May 1996