Nutnaree Kleawsirikul

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Technologies and Skills

- **Languages/Tools**: C, C#, Python, Java, Latex, Visual Studio, WPF, WinForm, Accord.NET, Scikit-learn, Seaborn, Matplotlib, GraphViz
- **Technical**: Pattern recognition, machine learning, data preprocessing, data visualization, data collection, ground truth annotation, signal segmentation, performance evaluation, basic embedded system
- **Interest**: IoT, big data analytics, data science
- **Languages**: Thai (Native), English (Professional), Japanese (Beginner)

Research Experience

- **Touch Sensing System**
  Master's and Ph.D. Researcher, Tokyo Institute of Technology *Oct 2013 - Present*
  - Analyzed social touch interaction for essential touch location and designed appropriate touch sensors.
  - Developed a soft-based touch sensing interface as a distributed embedded system using conductive fabrics and accelerometers.
- **Social Touch Recognition**
  PhD. Researcher, Tokyo Institute of Technology *Oct 2015 - Present*
  - Proposed an unsupervised learning of embrace (a way of holding) patterns based on k-means algorithm and location-based features and evaluated by quantitative analysis.
  - Suggested a class assignment based on subsets of extracted images without using ground truths.
  - Suggested a guideline to select a recognition model with possibility of good recognition performance.
  - The obtained model can recognized new people's embraces with more than 80% accuracy.
  - Developed a touch gesture recognition method based on random forest classifier, multiple FIR filtering and dynamic information.
  - The classifier can recognize touch gestures performed during different embraces with estimated good accuracy.
  - Presented at international conference.
- **Unsupervised Learning for Time-Series Data**
  Master's Researcher, Tokyo Institute of Technology *Oct 2013 - Sep 2015*
  - Collected and analyzed time-series data of human embrace interaction.
  - Proposed a two-layered hidden Markov model for unsupervised learning of time-series data.
  - Analyzed sequential patterns based on series of the hidden states of the upper layer hidden Markov model.
- **Automated Hemorrhage Detection for Diabetic Retinopathy**
  Undergraduate Researcher, Sirindhorn International Institute of Technology *Oct 2012 - Feb 2013*
  - Extracted hemorrhage blob candidate for diabetic retinopathy using image processing techniques.
  - Detected and classified round and slim shape hemorrhages using rule-based classification.
  - Presented at international conference.

Education

- **Tokyo Institute of Technology** Tokyo, Japan
  D.Eng in Computational Intelligence and Systems Science; MEXT Scholarship *Oct. 2015 – Mar. 2019 (Expected)*
- **Tokyo Institute of Technology** Tokyo, Japan
  M.Eng in Computational Intelligence and Systems Science; MEXT Scholarship *Oct. 2013 – Sep. 2015*
- **Sirindhorn International Institute of Technology** Pathum Thani, Thailand
  B.S. in Computer Science; Full scholarship; GPA: 3.95/4.00 *May. 2009 – Mar. 2013*

Work Experience

- **Code and Creation** Bangkok, Thailand
  Part-time Web Application Developer *Apr 2013 - August 2013*
  - Developed Joomla Component for an online learning platform.
- **Sirindhorn International Institute of Technology** Pathum Thani, Thailand
  Basic C Programming Teacher Assistance *Oct 2012 - Feb 2013*
  - Provided guidance and graded Basic C programming for lab students.
- **Total Access Communication Public Co., Ltd. (DTAC)** Pathum Thani, Thailand
  Internship *Apr 2012 - May 2012*
  - Learned about basic telecommunication.
  - Assisted in management of telecommunication asset information.

Publications

- **N. Kleawsirikul**, H. Mitake, and S. Hasegawa, ”Unsupervised embrace pose recognition method for stuffed-toy robot,” *Adv. Robot.*, 2018.
- **N. Kleawsirikul**, H. Mitake, and S. Hasegawa, ”Unsupervised embrace pose recognition using k-means clustering,” in *Proc. 26th IEEE International Symposium on Robot and Human Interactive Communication (ROMAN'17)*, Lisbon Portugal, pp. 883-890, Aug 2017. (Conference Presentation)
- **N. Kleawsirikul**, H. Mitake, and S. Hasegawa, “Tactile recognition based on two-layered hidden markov models,” in *Proc. IEEE RO-MAN'17: Workshop on ARtificial Perception, MAchine Learning and DAtasets for Human-Robot Interaction (ARMADA'17)*, pp. 7–12, 2018 (Workshop Presentation).
- S. Hasegawa, **N. Kleawsirikul**, and M. Kawaguchi, ”Archery routing motion pattern comparison using hidden Markov models,” in *Proc. JSME Annual Conference on Robotics and Mechatronics (Robomec)*, 2016.
- Y. Li, **N. Kleawsirikul**, Y. Takase, H. Mitake, and S. Hasegawa, ”Intention expression in stuffed-toy robots based on force control,” in *Proc. 11th Conference on Advances in Computer Entertainment Technology (ACE'14)*, Maderia, Portugal, pp. 22:1-22:5, 2014.
- **N. Kleawsirikul**, S. Gulati, and B. Uyyanonvara, ”Automated retinal hemorrhage detection using morphological top hat and rule-based classification,” in *Proc. International Conference on Intelligent Computational Systems (ICICS'2013)*, Singapore, pp. 39-43, Apr 2013. (Conference Presentation)
- S. Gulati, **N. Kleawsirikul**, and B. Uyyanonvara, ”A review on hemorrhage detection methods for diabetic retinopathy using fundus images,” in *Proc. International Conference on Biological and Medical Science (ICBMS2012)*, Pattaya, Thailand, pp. 25-29, Dec 2012.

Honors and Awards

- **MEXT University Recommendation Scholarship (Monbukagakusho)** 2013-2018
- **First Class Honor** : BS in Computer Science, Sirindorn International Institute of Technology 2013
- **Best Paper** : International Conference on Biological and Medical Science (ICBMS2012) 2012
- **Academic Excellence Award** : Sirindorn International Institute of Technology 2012
- **Academic Excellence Award** : Sirindorn International Institute of Technology 2010
- **Full Scholarship for Undergraduate Study** : Sirindorn International Institute of Technology 2009-2013