Curriculum Vitae

Sangwoo Kang

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1. Personal Data

- Position : Assistant professor of Department of Software at Gachon University
- Date of Birth: Nov 22, 1976

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2. Contact

- Address:
  - ✓ #430 Main Library Building
  - ✓ 1342, Seongnam-daero, Sujeong-gu, Seongnam-si, Gyeonggi-do
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3. Research Interests

- Spoken Dialogue Interface / UI-UX / Natural Language Processing
  - ✓ Dialogue System using (Deep) Machine Learning for Robot/Vehicle and Mobile
  - ✓ Dialogue and Discourse Management
  - ✓ Speech Acts / Action Classification
  - ✓ Name-entity Recognition
  - ✓ Post Correction for Automatic Speech Recognition
- Text Classification / Information Retrieval
  - ✓ Text Classification Based on Unsupervised Learning / Supervised Learning
  - ✓ Clustering
  - ✓ Semantic Search with Wikipedia
- Opinion Mining
  - ✓ Comparison Mining
  - ✓ Sentimental Classification

4. Doctorate

- Doctor of philosophy in Computer Science and Engineering, Aug 2012, Sogang University, Korea

- Dissertation Title: Hybrid Dialogue Management Model Using a Corpus-based Framework, Advisor: Prof. Jungyun Seo

5. Experiences

- Aug 2016 ~ Present: Assistant Professor of Department of Software at Gachon University

- Feb 2013 ~ July 2016: Research Fellow Professor of Department of Computer Science and Engineering at Sogang University

- Sep 2012 ~ Jan 2013: Research Professor of Department of Computer Science and Engineering at Sogang university

- Mar 2005 ~ Aug 2011: Instructor of Department of Computer Science and Engineering at Sogang University

6. Professional Activities

- Program Committee Member:
    - ✓ Annual Conference on Human & Cognitive Language Technology (2014 ~)
    - ✓ Korea Computer Congress (2015 ~)
- Journal Reviewers:
    - ✓ Korean Institute of Information Scientists and Engineers (2014 ~)
- Korean Society of Cognitive Science (2014 ~)

7. Honors and Awards

- 2017 국어정보처리 시스템 경진대회 대상 (문화체육관광부 장관상)

8. Teaching

- Robotics: 2017 autumn, 2016 autumn
- Computer Security: 2017 autumn, 2016 autumn
- Data Mining : 2017 spring
- Web Programing : 2017 spring

9. Projects

- 2017 ~ Present, Principal Investigator, "QA system for the Service Robot," Supported by Hyundai Motor.
- 2017 ~ Present, Principal Investigator, "영어사전용 식별 및 중의어 해소개발 기술," Supported by Citrus EduTech.
- 2017 ~ Present, Principal Investigator, "사용자 적응형 어체 변환을 위한 형태소 합성 기술 연구," by Sogang University.
- 2016 ~ Present, Co-Principal Investigator, "Development of Distant Speech Recognition and Multi-Task Dialog Processing Technologies for In-Door Conversational Robots," Supported by Ministry of Commerce, Industry and Energy.
- 2016 ~ Present, Principal Investigator, "Development of Intelligent Dialogue Interface for The IoT Environment," Supported by National Research Foundation of Korea.
- 2013 ~ 2016, Principal Investigator, "The Technology Development of Dialogue Management for Virtual Personal Assistant Services of Smart devices," Supported by National Research Foundation of Korea.
- 2012 ~ 2015, Co-Principal Investigator (Chief Developer), "The Original Technology Development of Interactive Intelligent Personal Assistant Software for the Information Service on multiple domains," Supported by Ministry of Knowledge Economy.
- 2009 ~ 2013, Co-Principal Investigator (Chief Developer), "Developing Spoken Dialogue Interface Technologies or Intelligent Talking Companion Robots by Integrating Voice/Image Information and Workbench toolkits," Supported by Ministry of Knowledge Economy.
- 2011 ~ 2012, Researcher, "QA Solution for Personal information Using Wikipedia," Supported by LG Electronics.
- 2010 ~ 2012, Researcher, "Development of Speech Synthesizer and AAC Software for the Visually and Vocally impaired," Supported by Ministry of Knowledge Economy
- 2010 ~ 2010, Researcher, "Development of Word Suggestion Technology Considering Input Errors in Mobile Devices," Supported by Samsung Electronics.
- 2009 ~ 2012, Researcher, "Development of Intelligent Spoken Dialogue Interface for Mobile Devices," Supported by National Research Foundation of Korea.
- 2006 ~ 2009, Researcher, "The Development of Interaction Techniques for Intelligent Robots," Supported by Ministry of Commerce, Industry and Energy.
- 2006 ~2006, Researcher, "Technique Acceleration for SKT 1mm Service," SK Telecom.
- 2003 ~ 2006, Researcher, "The Development of Spoken Dialogue Interface Technique for Silver Mate," Supported by Ministry of Commerce, Industry and Energy.
- 2004 ~ 2006, Research Assistant, "The Development of a Machine Self Growth Model Based on Brain Information Processing," Supported by Ministry of Commerce, Industry and Energy.
- 2004 ~ 2004, Researcher, "The Development of a Multi Domain Dialogue Model for an Intelligent Robot System," Supported by ETRI.
- 2003 ~ 2005, Researcher, "A Study on Development of Dialog-based Information Retrieval and Question/Answering System based on Thesaurus," Supported by Korea Science and Engineering Foundation.

10. Transfer of Technical Know-how

- 2015 ~ 2017, Co-Principal Investigator, "Dialogue Management and Language Understanding Technique for dialogue Interface in Vehicle Environment," Hyundai Motor.
- 2014, Co-Principal Investigator, "Spoken Dialogue Interface Technique for multi domain," SK Telecom.

11. Patents

- 2017.03.06, Sangwoo Kang et al., "문서 감정 분류용 딥러닝 인코딩 장치 및 방법," Domestic Patent
- 2017.02.27, Sangwoo Kang et al., "마이크로 블로그의 개체명 링킹 시스템," Domestic Patent
- 2016.01.27, Sangwoo Kang et al., "채팅 데이터 학습 및 서비스 방법 및 그에 따른 시스템," Domestic Patent
- 2015.12.24, Sangwoo Kang et al., "기계학습을 이용한 음성인식방법," Domestic Patent
- 2017.04.03, Sangwoo Kang et al., "지식베이스를 이용한 개체명 인식 코퍼스 생성 및 방법," Domestic Patent.
- 2014, Sangwoo Kang et al., "Data Learning and Service Methods for a Chatting System," International Patent Pending (PCT)
- 2014, Sangwoo Kang et al., "Voice Recognition Method Using Machine Learning," International Patent Pending (USA)

12. List of Publications

Journal Publications

1. [KCI] Sangwoo Kang, (2017), "Graph-Based Word Sense Disambiguation Using Iterative Approach," *Journal of Korean Institute of Next Generation Computing*. (in Korean)

2. [KCI] Sunjea Kwon, Juae Kim, Sangwoo Kang(Corresponding Author), Jungyun Seo, (2017), " An Attention Method-based Deep Learning Encoder for the Sentiment Classification of Documents," *Journal of Korean Institute of Information Scientists and Engineers: Software and Applications*. (in Korean)

3. [KCI] Soyoon Jeong, Youngmin Park, Sangwoo Kang(Corresponding Author), Jungyun Seo, (2016) Entity linking for Tweets using user model and real-time news stream," Cognitive Science. (in Korean)

4. [KCI] Youngmin Park, Sangwoo Kang(Corresponding Author), Jungyun Seo, (2016), "A Generation of a Corpus for Named-entity Recognition Using Knowledge Bases," *Cognitive Science*. (in Korean)

5. [SCIE] Youngmin Park, Sangwoo Kang(corresponding author), Jungyun Seo (2016), "Information Extraction Using Distant Supervision and Semantic Similarities," *Advances in Electrical and Computer Engineering*.

6. [KCI] Dongsuk O, Sangwoo Kang(Corresponding Author), Jungyun Seo, (2015), "An Iterative Approach to Subgraph-Based Word Sense Disambiguation Using Word2Vec," *Cognitive Science*, (in Korean)

7. [KCI] Sunjae Kwon, Juae Kim, Sangwoo Kang(Corresponding Author), Jungyun Seo, (2016), "Korean cQA system using Multiple Machine Learning Method," *Cognitive Science*, (in Korean)

8. [KCI] Soyun Jeong, Youngmin Park, Sangwoo Kang(Corresponding Author), Jungyun Seo (2015), "Entity Linking For Tweets Using User Model and Real-time News Stream," *Cognitive Science*, Vol.26 No.4, pp.377-394. (in Korean)

9. [SCIE] Sangwoo Kang, Harksoo Kim, Hyun-Kyu Kang, Jungyun Seo (2014), "Lightweight Morphological Analysis Model for Smart Home Applications Based on Natural Language Interfaces," *International Journal of Distributed Sensor Networks*, Vol.2014, Article ID 570634, pp.53-56.

10. [SCIE] Sangwoo Kang, Jungyun Seo (2014), "Two-phase reanalysis model for understanding user intention," *Pattern Recognition Letters*, Vol.42, pp.35-39.

11. [SCIE] Sangwoo Kang, Ji-Hwan Kim, Jungyun Seo (2014), "Post-error Correction in Automatic Speech Recognition Using Discourse Information," *Advances in Electrical and Computer Engineering*, Vol.14 No.2, pp.53-56.

12. [SCIE] Sangwoo Kang, Youngjoong Ko, Jungyun Seo (2013), "Hierarchical speech-act classification for discourse analysis," *Pattern Recognition Letters*, 34(10), pp.1119-1124.

13. [SCIE] Sangwoo Kang, Youngjoong Ko, Jungyun Seo (2013), "A dialogue management system using a corpus-based framework and a dynamic dialogue transition model," *AI communications*, Vol.26 No.2, pp.145-159.

14. [KCI] Sangwoo Kang, Jungyun Seo (2013), "An Integrated Model using Re-training Method for the Understanding of User Intention in a Dialogue System," *Journal of Korean Institute of Information Scientists and Engineers: Software and Applications*, Vol.40 No.9, pp.519-525. (in Korean)

15. [KCI] Sangwoo Kang, Jeachul Yang, Jungyun Seo (2013), "Light Weight Korean Morphological Analysis Using Left-longest-match-preference model and Hidden Markov Model," *Cognitive Science*, Vol24. No2., pp.95-109. (in Korean)

16. [SCIE] Sangwoo Kang, Youngjoong Ko, Jungyun Seo (2012), "Generating Effective Responses for a Plan-based Dialogue System in Human-Robot Interaction," *INFORMATION - An International Interdisciplinary Journal, International Information Institute*, Vol.15 No.2, pp.949-960.

17. [SCIE] Sangwoo Kang, Harksoo Kim, Jungyun Seo (2010), "A reliable multidomain model for speech act classification," *Pattern Recognition Letters*, Vol.31 No.1, pp.71-74.

18. [KCI] Sangwoo Kang, Hongmin Park, Jungyun Seo (2010), "Emotion Classification of User's Utterance for a Dialogue System," *Cognitive Science*, Vol.21 No.4, pp.459-480. (in Korean)

19. [KCI] Choong-Nyoung Seon, Sangwoo Kang(Corresponding Author), Jungyun Seo (2010), "Automatic Recognition and Normalization System of Korean Time Expression using the individual time units," *Cognitive Science*, Vol.21 No.4, pp.447-458. (in Korean)

20. Sangwoo kang, Sungwook Lee, Jungyum Seo (2009), "Dialogue Strategies to Overcome Speech Recognition Errors in Form-Filling Dialogue," *Lecture Note in Artificial Intelligence*," Vol.5459, pp.282-289.

21. [KCI] Sangwoo Kang, Youngjoong Ko, Jungyun Seo (2008), "Using Plan Recognition and a Discourse Stack for Effective Response Generation in a Dialogue System," *Cognitive Science*, Vol.19 No.2, pp.107-123. (in Korean)

22. [KCI] Sangwoo Kang, Songwook Lee, Jungyun Seo (2006), "Dialogue Strategies to Overcome Speech Recognition Errors in Form-Filling Dialogue," *Cognitive Science*, Vol.17 No.2, pp.139-150. (in Korean)

Conference Publications

1. Chi-Yun Song, Sung-Min Yang, Sangwoo Kang, "Named-entity Recognition Using bidirectional LSTM CRFs", *Proceedings of the 29th Annual Conference on Human and Cognitive Language Technology*. (in Korean)

2. Jeaseong Park, Sangwon Lee, Jeana Jang, Sagnwoo Kang, "Time Expression Analysis For Reminder Applications Using Speech Reconition", *Proceedings of the 29th Annual Conference on Human and Cognitive Language Technology.* (in Korean)

3. Jungyun Seo, Myungwan Koo, Sangwoo Kang, Youngmin Park (2015), "Dialogue Platform for Interactive Personal Assistant Software," *Proceedings of 6th International Workshop on Spoken Dialogue Systems.*

4. Soyun Jeong, Youngmin Park, Sangwoo Kang, Jungyun Seo (2015), "Improved Entity Linking with User History and News Articles," *Proceedings of The 29th Pacific Asia Conference on Language, Information and Computation.*

5. Dongsuk O, Donghyun Yoo, Sangwoo Kang, Jungyun Seo (2015), "Knowledge Representation and Management for Multi-domain Dialog System," *Proceedings of Korea Computer Congress.* (in Korean)

6. Myungho Noh, Youngmin Park, Sangwoo Kang, Jungyun Seo (2015), "Object Recognition using Lexico-syntactic Pattern and Wikipedia," *Proceedings of Korea Computer Congress.* (in Korean)

7. Youngmin Park, Sangwoo Kang, Jungyun Seo (2014), "Title Named Entity Recognition using Wikipedia and Abbreviation Generation," *Proceedings of International Conference on Big Data and Smart Computing.*

8. Woochul Lee, Sangwoo Kang, Jungyun Seo (2014), "A Reciprocal Method between Named Entity Recognition and Relation Extraction by using Distant Supervision," *Proceedings of Korea Computer Congress.* (in Korean)

9. Yejin Kim, Youngmin Park, Sangwoo Kang, Sangkeon Jung, Cheongjae Lee, Jungyun Seo (2014), "Post-Processing of Speech Recognition Using Phonological Variables and Improved Edit-distance," *Proceedings of the 26th Annual Conference on Human and Cognitive Language Technology.* (in Korean)

10. Soonpil Jang, Youngmin Park, Sangwoo Kang, Myoungwan Koo, Jungyun Seo, Harksoo Kim, Youngjoong Ko (2013), "A Dialogue Platform for an Interactive Personal Assistant Software," *Proceedings of Fall Conference on Korean Institute of Information Scientists and Engineers.* (in Korean)

11. Soonpil Jang, Sangwoo Kang, Jungyun Seo (2103), "Dialogue Ontology Model for Multi Domain Dialogue Management," *Proceedings of Fall Conference on Korean Institute of Information Scientists and Engineers.* (in Korean)

12. Youngmin Park, Sangwoo Kang, Byoungkyu Yoo, Jungyun Seo (2013), "Title Named Entity Recognition using Wikipedia and Making Acronym," *Proceedings of Korea Computer Congress.* (in Korean)

13. Sangwoo Kang, Jeachul Yang, Harksoo Kim, Jungyun Seo (2012), "Morpheme Segmentation and Part-of-Speech Tagging Using Restricted Resources," *Proceedings of the 24th Annual Conference on Human and Cognitive Language Technology.* (in Korean)

14. Ilhyeon Song, Sangwoo Kang, Jungyun Seo (2011), "Topic based Question-Answering System using Real-Time Search Terms," *Proceedings of the 23th Annual Conference on Human and Cognitive Language Technology.* (in Korean)

15. Kyungsun Min, Sangwoo Kang, Jungyun Seo (2011), "Augmentative and Alternative Communication System Using Decision Tree," *Proceedings of 5th Conference on Human and Computer Interaction.* (in Korean)

16. Juhee Kim, Sangwoo. Kang, Choong-Nyoung Seon, Jungyun Seo (2010), "A Reranking Model for ASR Post Correction Using Discourse Information," *Proceedings of the 2nd International Conference on Internet.*

17. Juhee Kim, Sangwoo. Kang, Choong-Nyoung Seon, Jungyun Seo (2010), "Post correct of Speech Recognition using Discourse Information," *Proceedings of the 22th Annual Conference on Human and Cognitive Language Technology.* (in Korean)

18. Wonseok choi, Sangwoo. Kang, Seon, Jungyun Seo (2010), "Multi-domain Dialog Framework Using Domain Switching Strategy," *Proceedings of the 22th Annual Conference on Human and Cognitive Language Technology*. (in Korean)

19. Sangwoo Kang, Youngjoong Ko and Jungyun Seo (2008), "A Plan-based Dialogue Model Using a Discouse Stack for Intelligent Human-Robot Interface Development," *Proceedings of the 7th International Conference on Advanced Language Processing and Web Information Technology*, pp. 162-167.

20. Sangwoo Kang, Hongmin Park, Youngjoong Ko, Jungyun Seo (2008), "The Corpus-based Dialogue System Using a Dialogue Transition Network and a Similarity Measure Method," *Proceedings of the 20th Annual Conference on Human and Cognitive Language Technology*. (in Korean)

21. Sangwoo kang, Donghyun Kim, Harksoo Kim, Jungyun Seo (2007), "Speech Act Classification Based on Individual Statistical Models in a Multi-Domain," *Proceedings of the 16th IEEE International Symposium on Robot and Human Interactive Communication*.

22. Sangwoo Kang, Hyoung Jeong, Jarksoo Kim, Jungyun Seo (2006), "The Design of a Multi-domain Dialogue System Based on a Form-based Model and Statistical Classification Techniques," *Proceedings of the 3rd International Conference on Ubiquitous Robots and Ambient Intelligence*.

23. Sangwoo Kang, Jungyun Seo (2007), "A Design of an Interaction Manager for Efficient Multi-Modal Dialogue Management in a Robot Platform," *Proceedings of the 4th CIR-COE Joint Workshop On Robot Technologies for Human-Robot Coexistence*.

24. Sangwoo Kang, Youngjoong Ko and Jungyun Seo (2006), "A Plan-based Model for Efficient Response Generation in Dialogue User Interface," *Proceedings of the 3rd CIR-COE Joint Workshop On Robot Technologies for Human-Robot Coexistence*.

25. Sangwoo Kang, jungyun Seo (2006), "A Design of Korean Case-frames for a Practical Dialogue System," *Proceedings of Conference on Korean Cognitive Science society*. (in Korean)

26. Sangwoo Kang1 Youngjoong Ko2 Jungyun Seo (2006), "Using Plan Recognition and a Discourse Stack for Efficient Response Generation in a Dialogue System," *Proceedings of the 18th Annual Conference on Human and Cognitive Language Technology*. (in Korean)

27. Sangwoo Kang, Youngjoong Ko and Jungyun Seo (2006), "A Design of a Plan-based Model for intelligent Human-Robot Development," *the 6th Workshop for Robot Development Technologies*. (in Korean)

28. Sangwoo Kang, SongWook Lee, Jungyun Seo (2005), "Sub-dialogue Generating Strategy Considering Speech Recognition Errors in a Plan-based Dialogue Model," *Proceedings of 5th Conference on Human and Computer Interaction*. (in Korean)

Bio Sketch

I'm an assistant professor in **the Department of Software at Gachon University** since September 2016. I got my Ph.D in Computer Science at Sogang University, where I was also a Research Fellow Professor.
My specialty is **Natural Language Processing**, and I am interested in spoken dialogue interface, information retrieval, text mining, opinion mining, big data, and UI/UX.
My recent focus has been in applying **Deep Learning** techniques to my research.
Currently, I'm leading **Intelligent Software & Natural Language Processing Laboratory** at Gachon University.