Bret A. Harsham

Manager

(617) 916-8177
bret.harsham@levelblue.com
2 Oliver St. Ste. 607
Boston, MA 02109

Background

Bret Harsham is a manager specializing in intellectual property matters at Elysium Digital.

Bret has over two decades of experience in the software industry as a research scientist and software engineer. Prior to joining Elysium Digital, he designed and developed speech recognition, audio, and multimodal user interfaces, API toolkits, and computer network security software. Bret is an inventor on ten U.S. patents. Bret's other areas of expertise include usability analysis, natural language processing, automotive user interfaces, distributed systems, and data visualization.

Bret holds a B.S. in computer science and engineering from the Massachusetts Institute of Technology.

Bret serves as a coach for FIRST LEGO League (FLL) robotics teams, and has taught computer science and math classes to both high school and elementary school children.

Professional Experience

- Elysium Digital, LLC, a LevelBlue company, Manager, 2025 – Present
- Elysium Digital, LLC, a subsidiary of Aon Corporation, Manager, 2023 – 2025
- Elysium Digital, LLC, a subsidiary of Aon Corporation, Senior Consultant, 2021 – 2023
- Mitsubishi Electric Research Laboratories (MERL), Principal Research Scientist, 2001 – 2021
- Dragon Systems, Inc./Lernout and Hauspie, N.V., Senior Software Engineer, 2000 – 2001
- Dragon Systems, Inc./Lernout and Hauspie, N.V., Software Engineer, 1997 – 2000
- Unified Access Communications, Co-Founder and Director of Integrated Technology, 1995 – 1997

Education

- B.S., Computer Science & Engineering, Massachusetts Institute of Technology, 2006

Training

- CopyrightX, Harvard Law School, 2025

Publications

- "Analysis of Malicious Email Detection using Cialdini's Principles." Hiroki Nishikawa, Takumi Yamamoto, Bret Harsham, Ye Wang, Kota Uehara, Chiori Hori, Aiko Iwasaki, Kiyoto Kawauchi, and Masakatsu Nishigaki. In *15th Asia Joint Conference on Information Security* (AsiaJCIS), 2020.
- "Adversarial Training and Decoding Strategies for End-to-end Neural Conversation Models." Takaaki Hori, Wen Wang, Yusuke Koji, Chiori Hori, Bret Harsham, John R. Hershey. *Computer Speech & Language,* 2019.
- "Attention-Based Multimodal Fusion for Video Description." Chiori Hori, Takaaki Hori, Teng-Yok Lee, Ziming Zhang, Bret Harsham, John R. Hershey, Tim K. Marks, and Kazuhiko Sumi. In *Proc. IEEE International Conference on Computer Vision* (ICCV), 2017.
- "Driver Confusion Status Detection Using Recurrent Neural Networks." Chiori Hori, Shinji Watanabe, Takaaki Hori, Bret A. Harsham, John R. Hershey, Yusuke Koji, Yoichi Fujii, and Yuki Furumoto. *IEEE International Conference on Multimedia and Expo* (ICME), 2016.
- "Dialog State Tracking with Attention-Based Sequence-to-Sequence Learning." Takaaki Hori, Hai Wang, Chiori Hori, Shinji Watanabe, Bret Harsham, Jonathan Le Roux, John R. Hershey, Yusuke Koji, Yi Jing, Zhaocheng Zhu, Takeyuki Aikawa. *IEEE Spoken Language Technology Workshop* (SLT), 2016.
- "Efficient Learning for Spoken Language Understanding Tasks with Word Embedding Based Pre-Training." Yi Luan, Shinji Watanabe, and Bret Harsham. In *Sixteenth Annual Conference of the International Speech Communication Association,* 2015.
- "Driver Prediction to Improve Interaction with In-Vehicle HMI." Bret Harsham, Shinji Watanabe, Alan Esenther, John Hershey, Jonathan Le Roux, Yi Luan, Daniel Nikovski, and Vamsi Potluru. In *Proc. Workshop on Digital Signal Processing for In-Vehicle Systems* (DSP), 2015.
- "Evaluation of Two Types of In-Vehicle Music Retrieval and Navigation Systems." Jingyi Zhang, Avinoam Borowsky, Bent Schmidt-Nielsen, Bret Harsham, Garrett Weinberg, Matthew R.E. Romoser, and Donald L. Fisher. In *Proc. The Human Factors and Ergonomics Society Annual Meeting,* 2012.
- "Investigating HUDs for the Presentation of Choice Lists in Car Navigation Systems." Garrett Weinberg, Bret Harsham, and Zeljko Medenica. *Driving Assessment Conference,* 2011.
- "Evaluating the Usability of a Head-Up Display for Selection from Choice Lists in Cars." Garrett Weinberg, Bret Harsham, and Zeljko Medenica. In *Proc. 3rd International Conference on Automotive User Interfaces and Interactive Vehicular Applications* (AutoUI), 2011.
- "Contextual Push-to-talk: Shortening Voice Dialogs to Improve Driving Performance." Garrett Weinberg, Bret Harsham, Clifton Forlines, and Zeljko Medenica. *International Conference on Human Computer Interaction with Mobile Devices and Services* (MOBILEHCI), 2010.
- "Object-Oriented Multimodality for Safer In-Vehicle Interfaces." Garrett Weinberg and Bret Harsham. In *Proc. SiMPE: 5th Workshop on Speech in Mobile and Pervasive Environments,* 2010.
- "Evaluation of Different Speech and Touch Interfaces to In-Vehicle Music Retrieval Systems." Lisandra Garay-Vega, Anuj K. Pradhan, G.L. Weinberg, Bent Schmidt-Nielsen, Bret A. Harsham, Y. Shen, Gautam Divekar, Matthew R.E. Romoser, M. Knodler, Donald L. Fisher. *Accident Analysis & Prevention,* May 2010.

- "Developing a Low-Cost Driving Simulator for the Evaluation of In-Vehicle Technologies." Weinberg, G.L.; Harsham, B.A., International Conference on Automotive User Interfaces and Interactive Vehicular Applications (AutomotiveUI), 2009.
- "Speech-Based UI Design for the Automobile." Bent Schmidt-Nielsen, Bret Harsham, Bhiksha Raj, and Clifton Forlines. *Handbook of Research on User Interface Design and Evaluation for Mobile Technology,* IGI Global, 2008.
- "DT Controls: Adding Identity to Physical Interfaces." Paul H. Dietz, Bret Harsham, Clifton Forlines, and Darren Leigh. In *Proc. 18th Annual ACM Symposium on User Interface Software and Technology,* pp. 245-252, October 2005.

Patents

- System and method for using human relationship structures for email classification. Bret Harsham, Chiori Hori. US Patent 11,651,222, filed April 3, 2020 and issued May 16, 2023.
- Method and system for scene-aware interaction. Chiori Hori, Anoop Cherian, Siheng Chen, Tim Marks, Jonathan Le Roux, Takaaki Hori, Bret Harsham, Anthony Vetro, and Alan Sullivan. US Patent 11,635,299, filed February 6, 2020 and issued April 25, 2023.
- Method and system for multi-label classification. Takaaki Hori, Chiori Hori, Shinji Watanabe, John Hershey, Bret Harsham, and Jonathan Le Roux. US Patent 11,086,918, filed December 7, 2016 and issued August 10, 2021.
- Method and system for recognizing a voice prompt containing a word sequence. Bret Harsham, John Hershey. Germany Patent DE112015003357T5 filed July 22, 2015, and issued January 14, 2021.
- Method for using a multi-scale recurrent neural network with pretraining for spoken language understanding tasks. Bret Harsham, Yi Luan, and Shinji Watanabe. US Patent 9,607,616, filed August 17, 2015, and issued March 28, 2017.
- Actions prediction for hypothetical driving conditions. Alan W. Esenther, Bret Harsham, John R. Hershey, Jonathan Le Roux, and Daniel Nikolaev Nikovski. US Patent 9,434,389, filed March 6, 2014, and issued September 6, 2016.
- Method and system for autonomously delivering information to drivers. Dirk Brinkman, Bret Harsham, John Hershey, and Daniel Nikolaev Nikovski. US Patent 9,305,306, filed August 20, 2014, and issued April 5, 2016.
- Determining word sequence constraints for low cognitive speech recognition. Bret Harsham and John Hershey. US Patent 9,196,246, filed July 22, 2014, and issued November 24, 2015.
- Method and system for dynamically adapting user interfaces in vehicle navigation systems to minimize interaction complexity. Daniel Nikolaev Nikovski, John R. Hershey, Bret Harsham, and Jonathan Le Roux. US Patent 9,170,119, filed September 24, 2013, and issued October 27, 2015.
- System and method for recognizing speech. Bret Harsham and John R. Hershey. US Patent 9,159,317, filed June 14, 2013, and issued October 13, 2015.
- Method for indexing for retrieving documents using particles. Bhiksha Ramakrishnan, Evandro B. Gouva, Bent Schmidt-Nielsen, Garrett Weinberg, and Bret A. Harsham. US Patent 8,229,921, filed February 25, 2008, and issued July 24, 2012.
- Method for interacting with users of speech recognition systems. Garrett Weinberg, Bhiksha Ramakrishnan, Bent Schmidt-Nielsen, and Bret A. Harsham. US Patent 7,917,368, filed February 25, 2008, and issued March 29, 2011.

- Computer system and computer-implemented process for simultaneous configuration and monitoring of a computer network. Bret Harsham and Lalit Jain. US Patent 6,041,347, filed October 24, 1997, and issued March 21, 2000.

Professional and Civic Affiliations

- First Lego League (FLL) Robotics Teams, Coach, 2013 – 2021