

# Workshop: Eye Gaze in Intelligent Human Machine Interaction

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## ABSTRACT

This workshop brought researchers from academia and industry together to share recent advances and discuss research directions and opportunities for next generation of intelligent human machine interaction that incorporate eye gaze.

## Author Keywords

Eye Gaze, Intelligent Human Machine Interaction

## ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI):  
Miscellaneous.

## General Terms

Algorithms, Design, Experimentation, Human Factors,  
Languages, Measurement, Theory

## INTRODUCTION

Eye gaze serves multiple functions in human-human communication. The speaker may use gaze to reference an object in the environment, or to indicate attention to the listener, and or to manage who has the floor, among other functions.

Researchers have long been interested in the role of eye gaze in human machine interaction. It has been used as a pointing mechanism in direct manipulation interfaces, for example, to assist users with “locked-in syndrome”. It has also been used to reflect information needs in web search and tailor information presentation. Based on joint attention indicated by eye gaze, it has been used as a facilitator in computer supported human-human communication. In conversational interfaces, eye gaze has been used to improve language understanding and intention recognition. It has also been incorporated in multimodal behavior of

embodied conversational agents. Recent work on human robot interaction has further explored eye gaze in incremental language processing, visual scene processing, and conversation engagement and grounding. Given the recent advances in eye tracking technology and the availability of non-intrusive and high performance eye tracking devices, there has never been a better time to explore new opportunities to incorporate eye gaze in intelligent and natural human machine communication.

## Topics

This workshop brought researchers from academia and industry together to share recent advances and discuss research directions and opportunities for next generation of human machine interaction that incorporate eye gaze. The workshop addresses the following areas:

- Empirical studies of eye gaze in human-human communication which have implications in human machine communication. Examples include new empirical findings of eye gaze in human language processing, in human vision processing, and in conversation management.
- Algorithms and systems that incorporate eye gaze for human computer interaction and human robot interaction. Examples include gaze-based feedback to information systems, gaze-based attention modeling, incorporating gaze for automated language processing, controlling gaze behavior for embodied conversation agents or robots to enable grounding, turn-taking, and engagement.
- Applications that demonstrate the value of incorporating eye gaze in practical systems to enable intelligent human machine communication.