

■ CrashAlert

Enhancing Peripheral
Alertness for Eyes-
Busy Interaction while
Walking



UNIVERSITY
OF MANITOBA

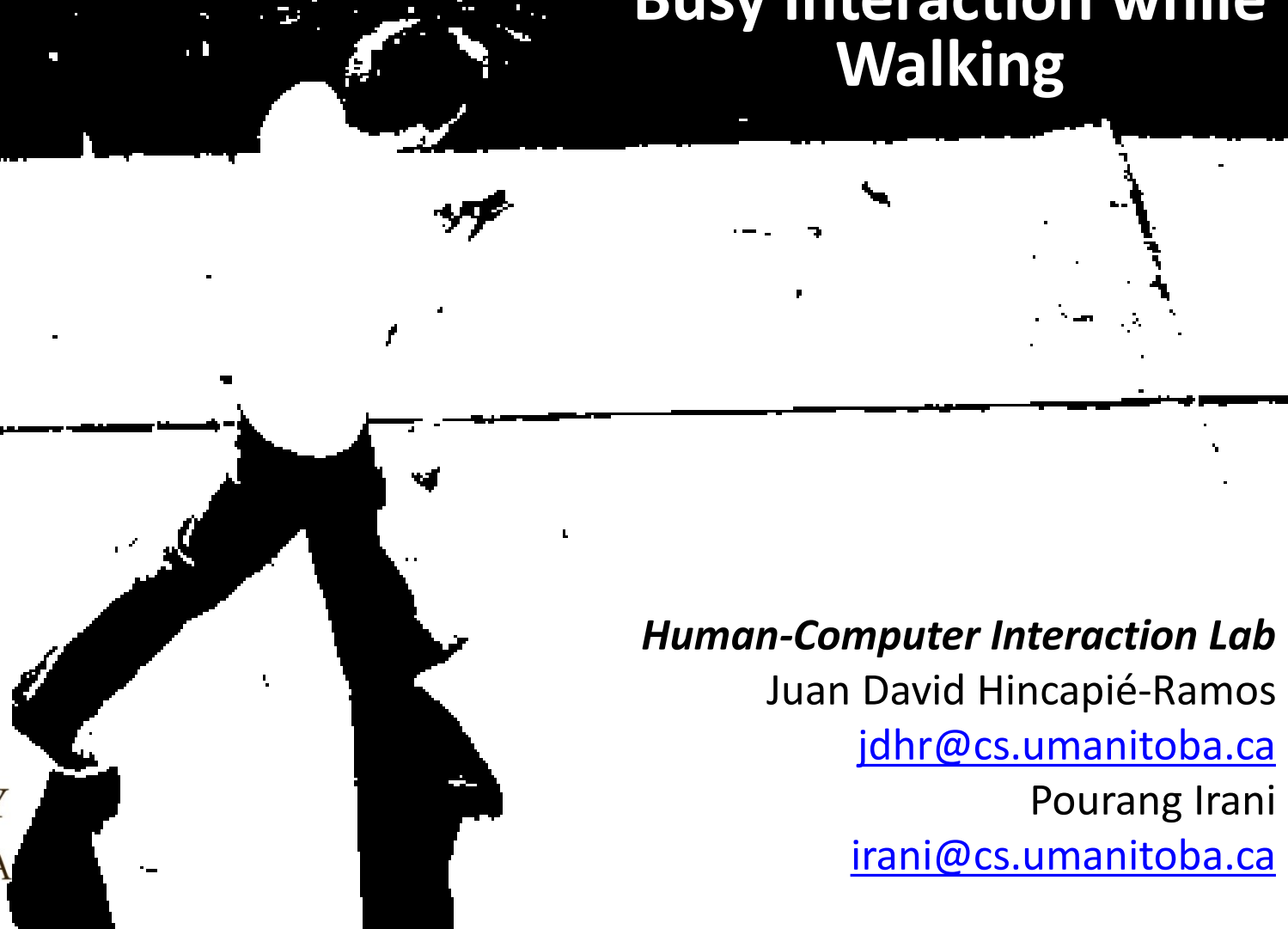
Human-Computer Interaction Lab

Juan David Hincapié-Ramos

jdhr@cs.umanitoba.ca

Pourang Irani

irani@cs.umanitoba.ca





Cannon	The White Stripes - White Stripes	↑
Carbon	Tori Amos - Scarlet's Walk	
Carnival	Natalie Merchant - Tigerlily	
Changes	David Bowie - Best of Bowie	
Chemicals	UV Protection - Consumer Material	
China	Tori Amos - Little Earthquake	
Choke	The Cardigans - First Band On The Moon	
College	Animal Collective - Sung Tong	
Communication	The Cardigans - Long Gone By	
Cotton	The Mountain Goats - We Shall Be	
Cowboy	The Sugarcubes - Life's Too Good	
Crave	Bjork - Vespertine	
Crazy	Tori Amos - Scarlet's Walk	
Creep	Radiohead - Pablo Honey	
Crows	The Mountain Goats - Devil in the Details	
Cruel	Tori Amos - From The Choirgirl Album	
Crying	Bjork - Debut	
Curl	Jonathan Coulton - Thing a Week	
Days	David Bowie - Reality	
Dead	Divine - Dead & Company	↓

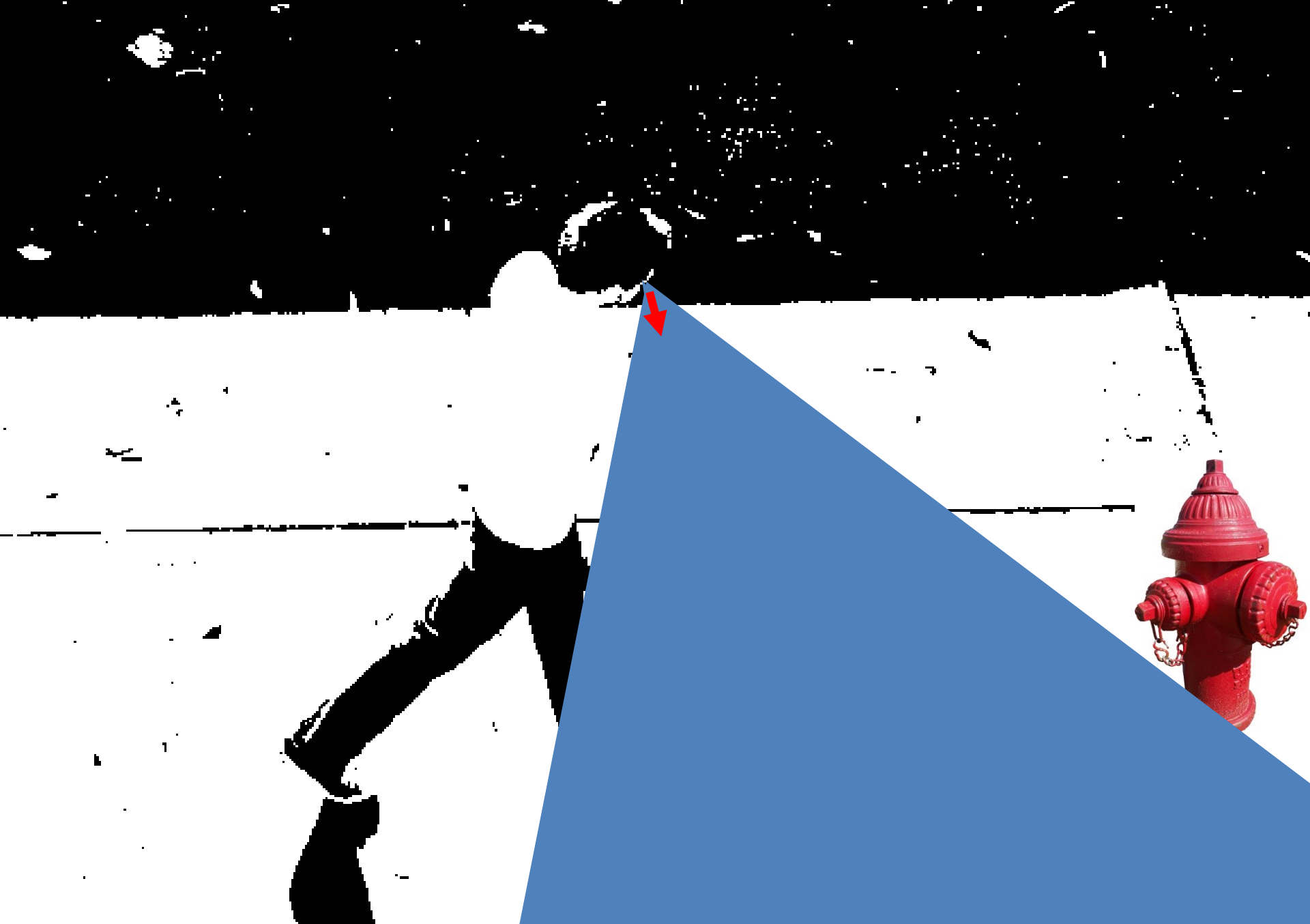
Carbon
Tori Amos - Scarlet's Walk

Cannon	The White Stripes - White Stripes	↑
Carbon	Tori Amos - Scarlet's Walk	
Carnival	Natalie Merchant - Tigerlily	
Changes	David Bowie - Best of Bowie	
Chemicals	UV Protection - Consumer Material	
China	Tori Amos - Little Earthquakes	
Choke	The Cardigans - First Band On The Moon	↓

Carbon
Tori Amos - Scarlet's Walk







Person's field of view does not cover the area in the direction of the movement



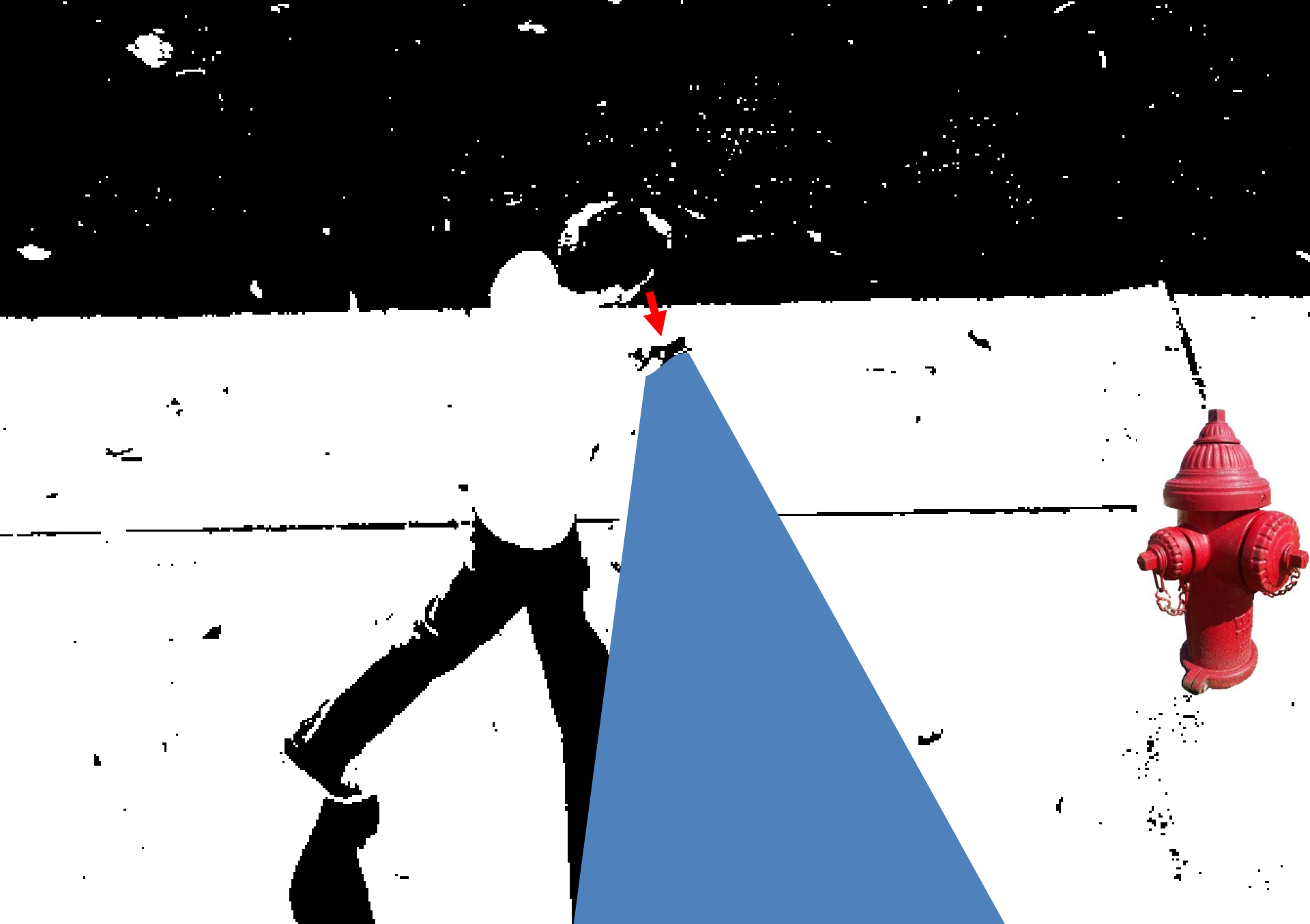




Sidewalk Buddy — On the

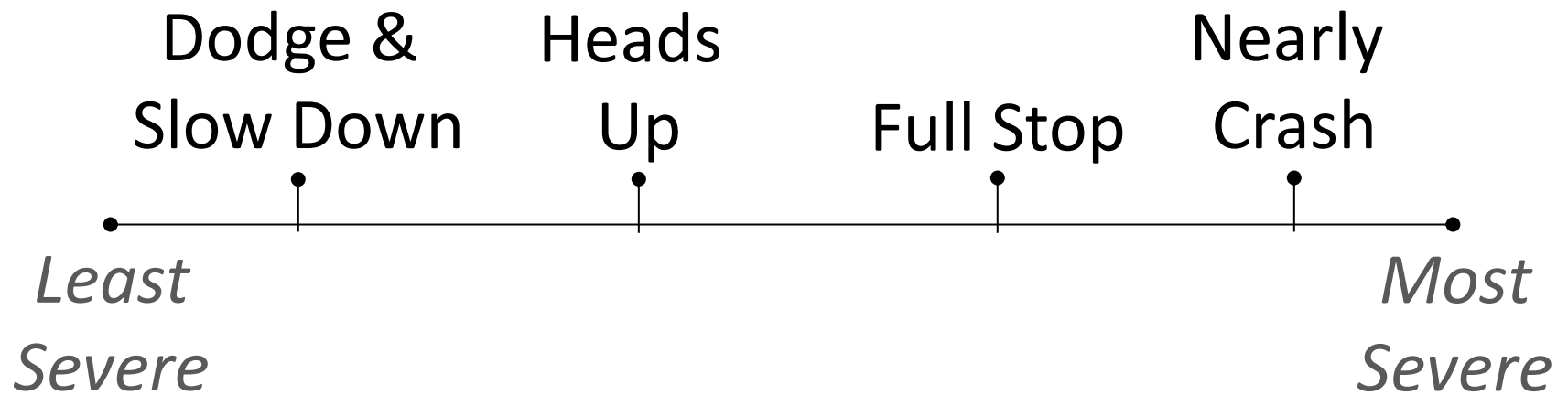








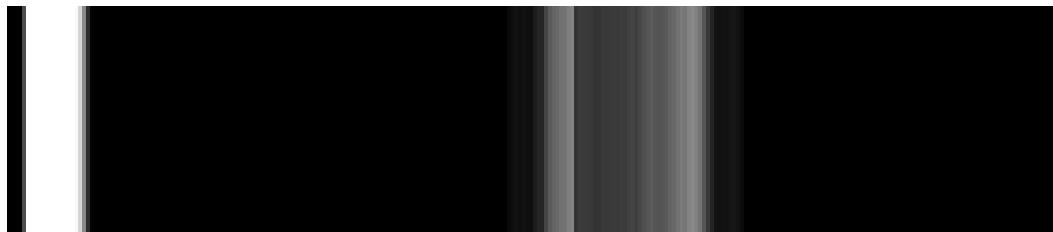


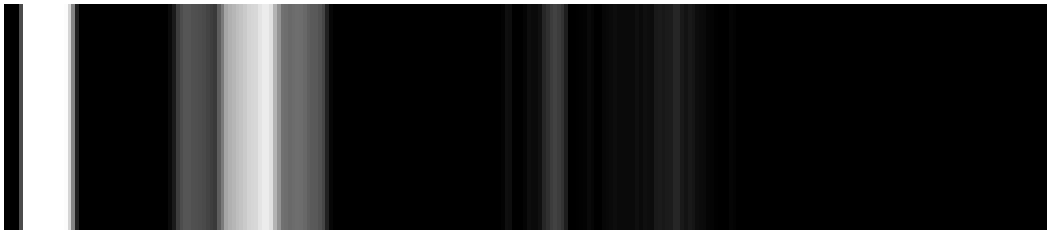


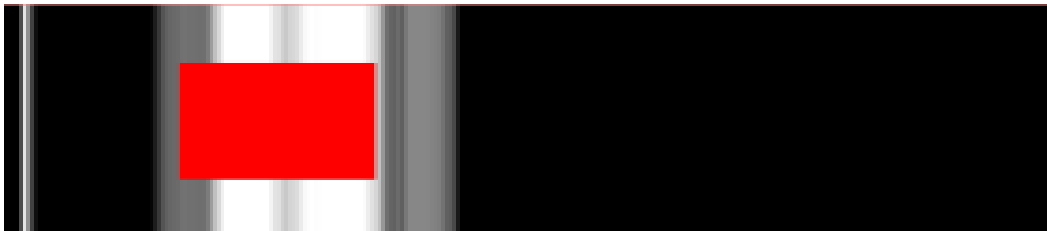
1. Encourage More Dodging
2. Alert on Imminent Collisions











Video 1

Video 2



Color



Depth Columns



Depth Mask



Color



Depth Columns



Depth Mask



Color



Depth Columns



Depth Mask



Color



Depth Columns



Depth Mask

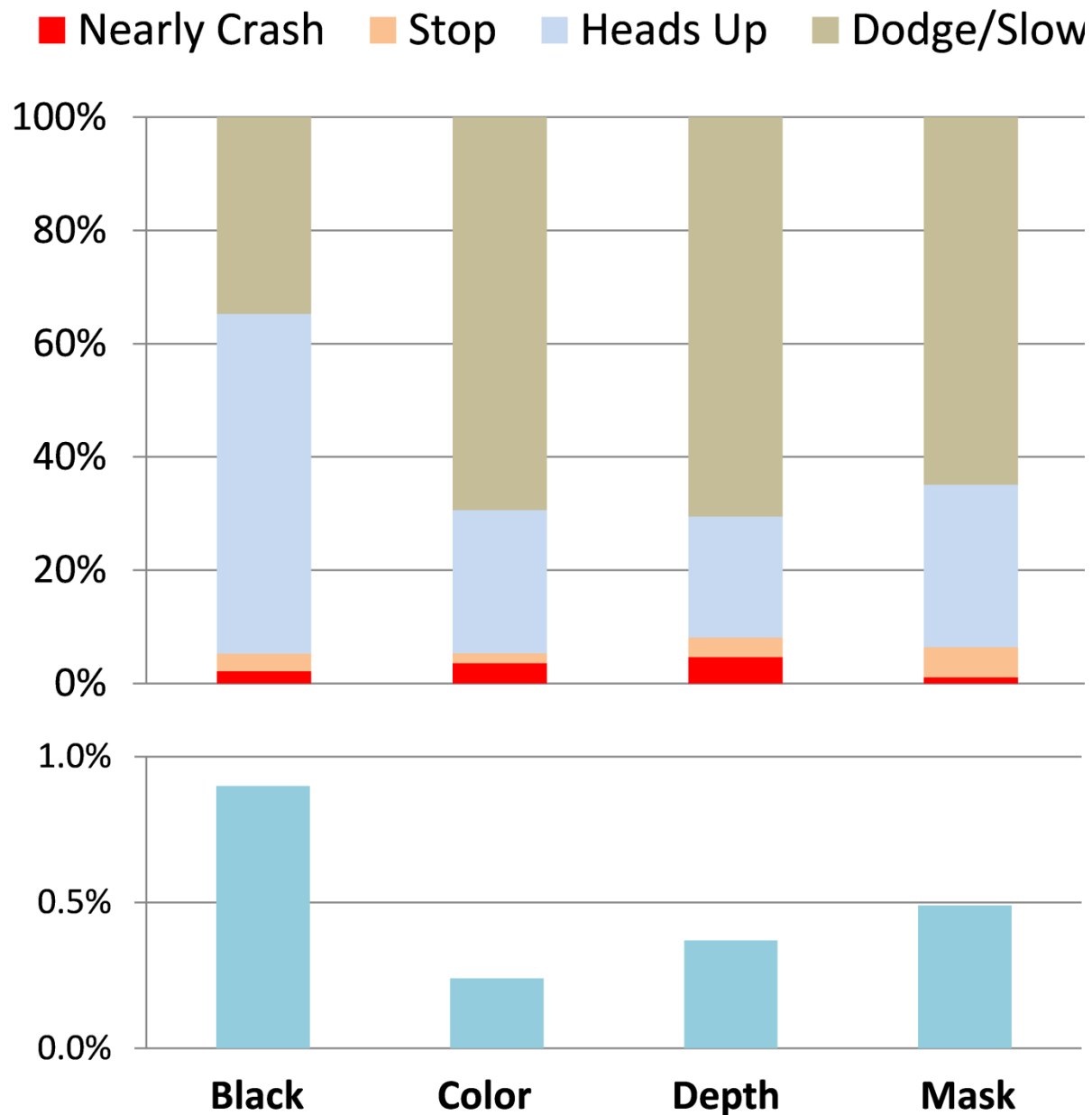


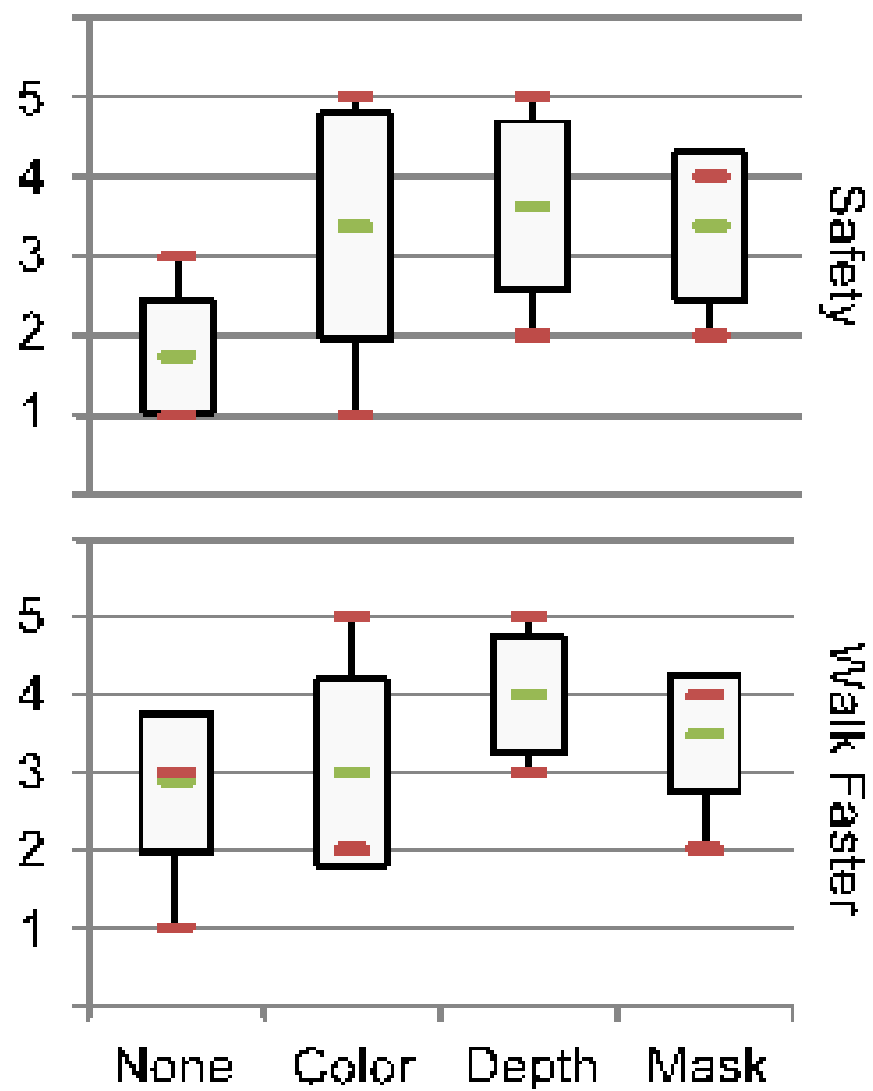
4x8x2 Experimental Design

- Walking Time
- Performance
- Collision Reaction
- Perceived & Interview









Abstraction

P8 *“I have to check the [color] image much more and longer”.*

P7 *“[with the depth image] I can see the [thin] veranda which I couldn't in the color image”.*

Abstraction Navigation

- Walk toward to dark zone
- Follow the alert



Abstraction

Navigation

Alerts

P1 *“I couldn’t tell whether people were coming toward me or moving further away”.*

P3 *“[I would like to see] a significant level indication of obstacles like how much danger if collision occurs”.*

- Safer Collision Management
- Recover Field of View
- Reduced Depth Visualizations
- Visual Alerts

Thank you! Questions?



UNIVERSITY
OF MANITOBA

Human-Computer Interaction Lab

Juan David Hincapié-Ramos

jdhr@cs.umanitoba.ca

Pourang Irani

irani@cs.umanitoba.ca