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VR@SN: Virtual Reality Assessment for Spatial Neglect

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VR@SN

Virtual Reality @ssessment for Spatial Neglect

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SPATIAL NEGLECT

Spatial Neglect is a **reduced or absent attention** to one side of the body, space, objects, or even mental imagery.

Spatial neglect is **highly prognostic** for rehabilitation outcome and caregiver burden.
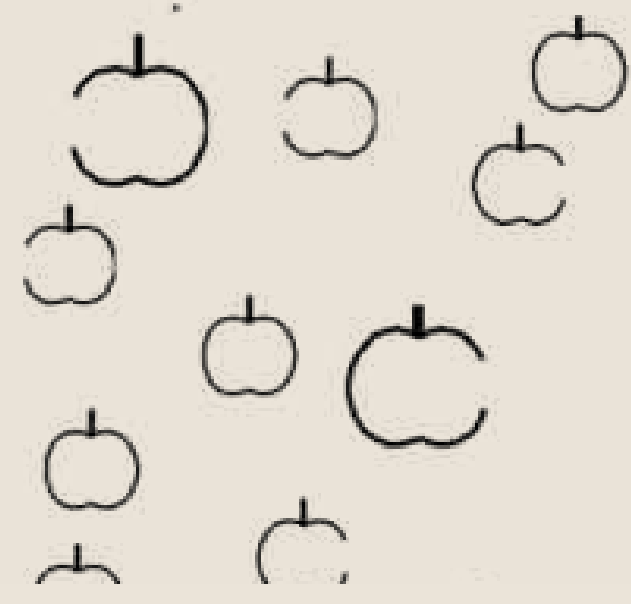
Around 50% of stroke survivors is expected to show initial spatial neglect and 20% after one year.

CLASSICAL ASSSESSMENT

SN is conventionally assessed using pen-and-paper tests. But they:

(1) have **little similarity to the real world,** which is 3D and dynamic.

(2) are **insensitive** to mild neglect and small changes over time.

THE POTENTIAL OF VR

Virtual Reality is a method to assess spatial cognition in **life-like**, yet controlled environments.

We can **track natural spatial behavior** using 6D head-tracking, 6D motion-tracking, and eye-tracking.
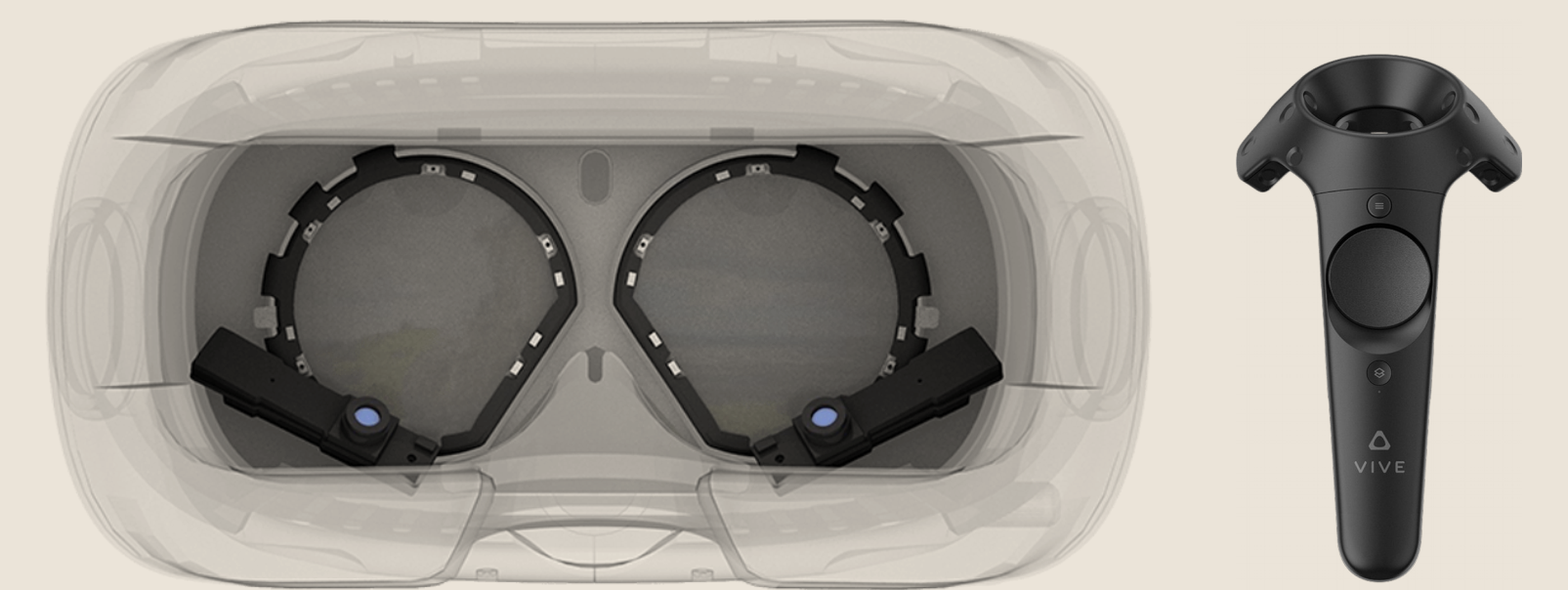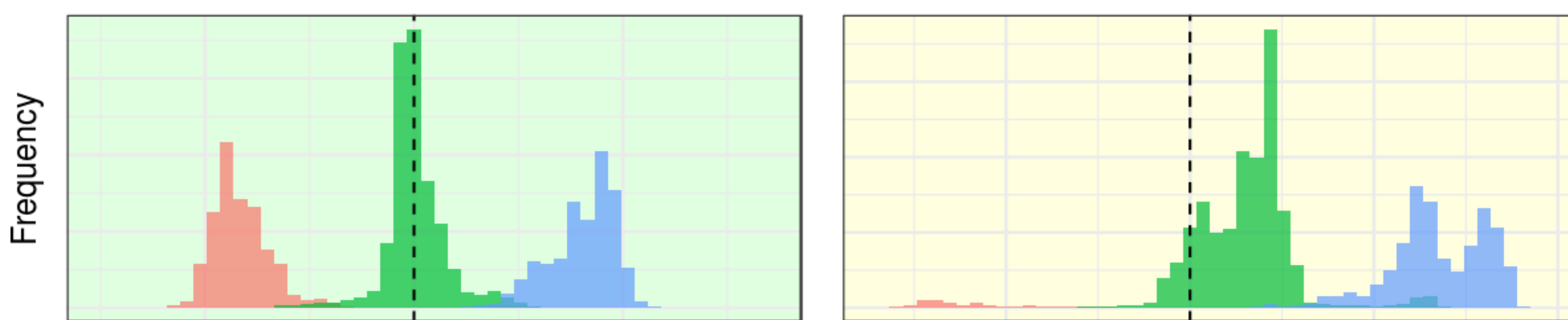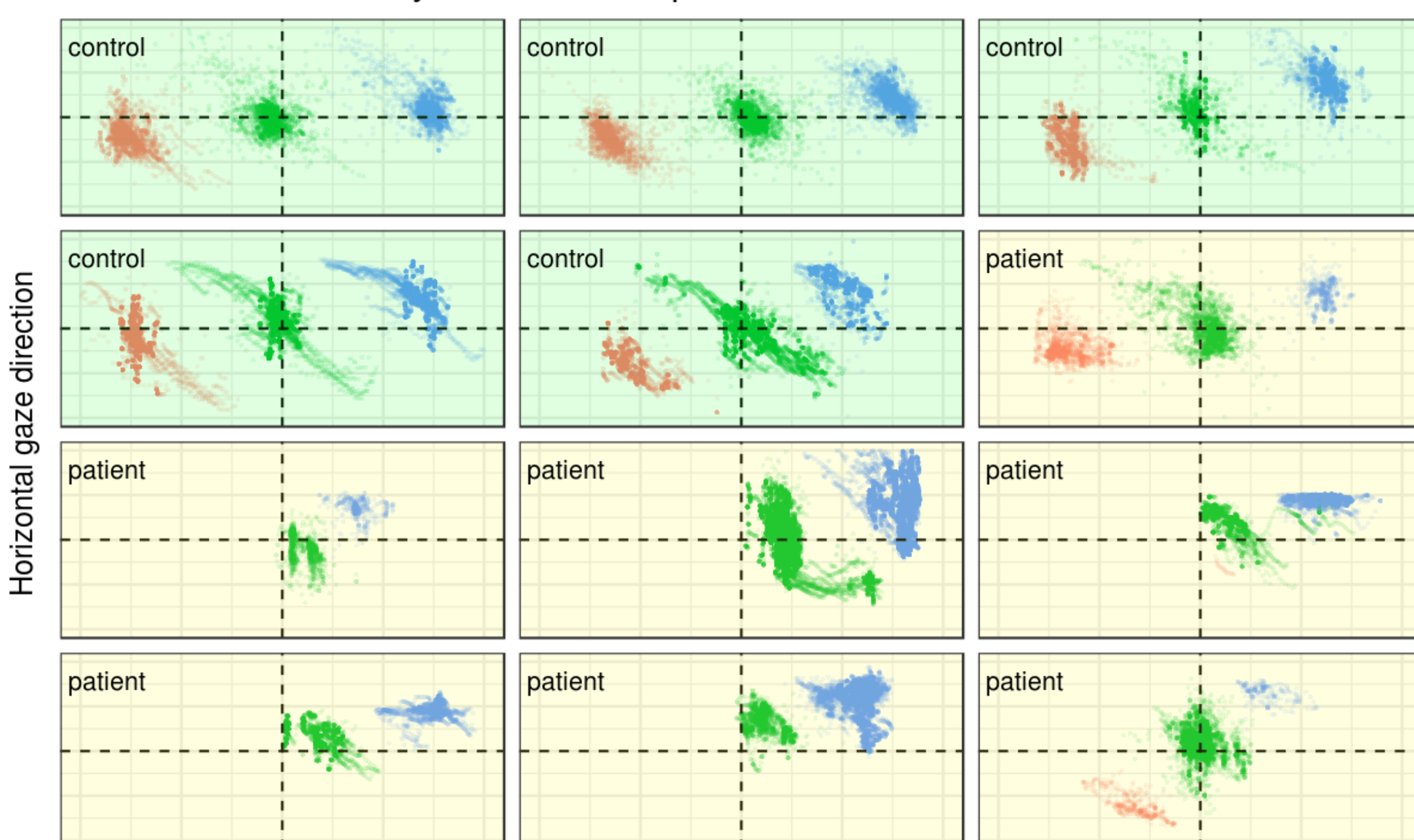
PILOT DATA: MUSEUM SCENE

Controls' head orientation

Patients' head orientation

Frequency

Individual horizontal eye-head control patterns

control, control, control, control, control, patient, patient, patient, patient, patient, patient, patient

Horizontal gaze direction

Horizontal head orientation

PILOT DATA: KITCHEN SCENE

RESULTS AND PERSPECTIVES

MUSEUM SCENE: Controls oriented equally to both sides with a consistent head-gaze control pattern.

Patients neglected the left of their body midline with two exceptions. Interestingly, many patients had **abnormal head-gaze control patterns in the intact hemifield** with large individual differences.

KITCHEN SCENE: Patients also exhibited a strong rightwards bias in this more complex and naturalistic scene.

The VR@SN platform combines precise tracking of movement and control of the visuo-spatial environment. This offers **new opportunities** for the assessment of spatial cognition in brain-injured patients and non-injured populations alike. Improving assessment of spatial neglect is an important first step towards the ultimate goal of individualized treatment.