and injection parameters as input. Thus, as opposed to traditional methods, the Reflux method inherently relies on, and is robust against, these hemodynamic disturbances. Refinement of the technique is needed to improve the accuracy and precision for clinical use.

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Disclosures S. Marfoglio: 5; C; Vascular Simulations, Inc. 6; C; Vascular Simulations Inc. **B. Kovarovic:** None. **D. Fiorella:** 4; C; Vascular Simulations Inc. **C. Sadasivan:** 2; C; Vascular Simulations Inc. 4; C; Vascular Simulations Inc. 6; C; Vascular Simulations Inc.

E-162 OPTIMAL PROJECTION ANGLE PLANNING TOOL FOR C-ARM IN AUGMENTED REALITY

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10.1136/neurintsurg-2020-SNIS.194

Introduction Acquiring images at an optimal projection viewing angle during a neurointerventional procedure is important to get proper view of aneurysms, avoid vessel foreshortening, obtain accurate measurements, and perform proper vessel cannulations. In some cases, the interventionalist may look for the appropriate view under fluoroscopy by acquiring multiple projection images. This radiation exposure can be avoided by using an interactive planning software that allows manipulation of a volumetric image. This abstract describes a novel method in which the interventionalist uses wearable augmented reality (AR) device to manipulate the volumetric image and select the view that best suits the procedure stage. The AR software generates the appropriate c-arm angle and indicates whether the angle is achievable by the c-arm.

Objective To provide the interventionalist a fast and intuitive way to manipulate volumetric images in order to select the best viewing angle while avoiding radiation exposure to scout for the best view.

Method An AR platform was developed to render volumetric data on wearable AR headset (Hololens2 Microsoft, Redmond WA). Hand gestures, eye gaze and voice control were provided as means to interact with 3D-rendered volumetric acquisition. A digitally reconstructed radiograph (DRR) in the direction of the physicians eyes was displayed in the headset next to the volumetric rendering. The corresponding C-arm angle was displayed above the DRR. Knowing the forward kinematics of the C-arm gantry (ceiling mounted Allura FD-20, Philips, NL), the color of the text changes based on whether the angle is achievable. A pre-op cone beam computed tomography (CBCT) image was acquired during a preclinical study. The interventionalist was presented with the volumetric rendering and asked to rotate the image to find the desired view. They were able to select the best viewing angle which was achievable by the gantry.

Results The interventionalist was able to achieve the desired angle without additional fluoroscopy and while remaining in the sterile field. The DRR provided a preview of what image to expect when the C-arm was moved to the calculated angle.

Conclusion Augmented reality provides a new interaction paradigm in the interventional suite. Articulated hand tracking proves to be an intuitive way to rotate and move the virtual content while remaining in the sterile field. Providing the C-arm angle to achieve the desired x-ray view has a potential to reduce radiation exposure during a procedure.

Disclosures A. Panse: 5; C; Philips Research. **M. Flexman:** 5; C; Philips Research. **B. Mory:** 5; C; Philips Research. **P. Webb:** 5; C; Philips Research. **P. Keenan:** 5; C; Philips Research.

E-163 A METHOD FOR AUTOMATIC ELOQUENCE EVALUATION IN ACUTE STROKE NEUROIMAGING

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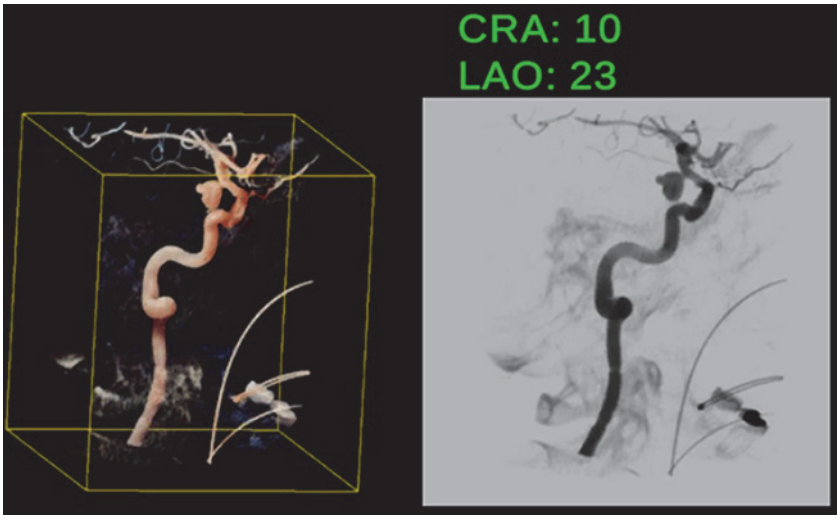
10.1136/neurintsurg-2020-SNIS.195

The current state of the art neuroimaging in patients with acute stroke presenting 6–24 hours after symptom onset includes CT or MRI perfusion sequences for delineating



Abstract E-162 Figure 1 Rendering captured from unity depicting volume rendered data on the left rotated to view the desired anatomy, and corresponding DRR on the right. The C-arm angles to achieve the DRR and displayed above the DRR