**7:30–8:30**

# Session 1 — Rebooting the OR: Why Digital Surgery Is About to Break Open

- *From Computer Vision to Cognitive Assistance in the OR*
- *Engineering the Path from Robotic Precision to Surgical Autonomy*
- *Compute, Simulation, and the Infrastructure Behind Physical AI*
- *Why Surgery Is Emerging as the Defining Use Case for Clinical AI*
- Faculty discussion — *What becomes possible in the next five years?*

**8:30–9:30**

# Session 2 — What Surgery Can Steal from the Real World

- Autonomous vehicles — *What Safe Autonomy Looks Like Outside the Hospital*
- Humanoid robotics — *Embodiment, Dexterity, and Adaptation in Human Environments*
- Industrial / heavy machinery — *Precision Under Risk: Lessons from High-Consequence Automation*
- Logistics / warehouse systems — *Coordination at Scale: Perception, Planning, and Throughput*
- Cross-industry discussion — *Which capabilities transfer first to procedural medicine?*

**9:30–10:15**

# Session 3 — 1 vs. 1 Debates That Will Shape the Field

- Haptics vs. no haptics
- Autonomy vs. augmented dexterity
- Vision vs. kinematics

**Break 10:15–10:45**

**10:45–11.30**

# Session 4 — The Machine Can See You Move: Kinematics, Perception, and Surgical Intent

- *Learning Surgical Intent from Motion and Context*
- *Kinematics as a Foundation Model for Intraoperative Intelligence*
- *Shared Autonomy, Robotics, and the Limits of Full Automation*
- *Control, Sensing, and the Road to Reliable Autonomous Action*
- *From Gesture Structure to Real-Time Scene Understanding in Surgery*

**11:30–12:30**

## Session 5 — Data Is the New Tissue: Beyond Video, Toward Surgical Intelligence

- *Building the Digital Substrate for Interoperable Surgical Data*
- *Why Multimodal Data Will Define the Next Decade of Procedural AI*
- Hyperscaler perspective — *Cloud, Compute, and the Operating Room as a Data Platform*
- *From Sensor Fusion to Scalable AI Deployment in the OR*

**Lunch 12:30–1:30**

**1:30–2:15**

## Session 6 — Regulatory Shark

- Lead lecture — *The FDA Lens on Adaptive, AI-Enabled Surgical Systems*
- Rapid-response discussion — *What evidence will matter most for decision support, autonomy, and workflow AI?*
- *Industry lightening pitches to mock FDA panel*

**2:15–3:00**

## Session 7 — NPJ Digital Surgery - First Signals: The Papers That Will Define the Category

- *NPJ Digital Surgery: the early publications, the gaps, and the agenda ahead*
- Short faculty reflections on what the field still has not solved

**3:15–3:30**

## Break

**3:30–4:15**

## Session 8 — Other Procedural Frontiers: Who Gets There Next?

- *Physical AI Beyond Surgery: Where High-Value Procedures Go Next*
- *Urology as a Proving Ground for Image-Guided Intervention*
- *Cross-Specialty Pathways for Digital Procedural Platforms*

**4:15–5:00**

## Session 9 — Navigation, Guidance, and the Cognitive OR

- *Intraoperative Navigation for Anatomy-Aware Decision Support*
- *Clinical-Grade AI: From Model Performance to Surgical Workflow Utility*
- *Perception Pipelines for Safer and Smarter Intervention*
- *Context-Aware Guidance from Robotic Data Streams*
- *Where Decision Support Ends and Autonomous Assistance Begins*
- *Translating Navigation Platforms into Scalable Product Strategy*

**4:00–5:45**

## Session 10 — The New Performance Stack

- *Turning OR Activity into Measurable Performance Insight*
- *Assessment, Coaching, and Digital Benchmarks for Procedural Quality*
- *What High-Performing Teams Will Expect from Surgical Analytics*
- *Feedback Loops, Learning Curves, and the Future of Operative Improvemen*