

The logo for the AI²M meeting, featuring the letters 'AI²M' in a bold, white, sans-serif font. The '2' is a smaller red superscript. A red horizontal bar is positioned below the 'AI' portion of the logo.

AI²M

First annual Artificial Intelligence
and Innovation in Medicine Meeting

Bologna (Italy)
September 19th - 21st 2024

The AI2M First annual Artificial Intelligence and Innovation in Medicine Meeting

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Filippo Filicori
USA
System Chief,
Surgical Innovation
Northwell Health,
New York



Gilberto Poggioli
Italy
Full Professor of Surgery
University of Bologna

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and Innovation in Medicine Meeting

Local organizing committee



Luigi Boni
Italy
Professor of Surgery,
University of Milano



Pietro Mascagni
Italy
Surgical resident,
Gemelli Hospital, Rome



Matteo Rottoli
Italy
Associate Professor,
University of Bologna

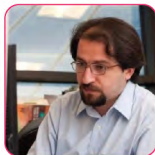


Riccardo Schiavina
Italy
Professor of Urology
University of Bologna

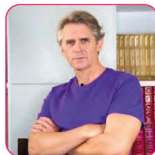


Jacopo Filicori
Italy
CEO Omniclinics,
Bologna

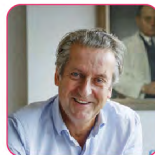
Speakers



Mahdi Azizian
USA
Senior Director
of engineering,
R&D Nvidia



Steve Bell
Italy
Expert in MedTech
Startups



Jaap Bonjer
Netherlands
Chair and Professor
of Surgery,
Amsterdam UMC



Elena Bottinelli
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Ivo Broeders
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Head of AI,
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Gherardo Carullo
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Vikrom Dhar
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Pieter DeBacker
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Chiara Formenti-Ujlaki
USA
Senior Counsel,
Data Protection Officer,
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Faculty

Speakers



Hans Fuchs
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Professor of Surgery,
University of Cologne



Gennaro Giustino
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Structural Heart Disease,
Henry Ford Hospital,
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Teodor Grantcharov
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CEO Surgical Safety
Technologies,
Palo Alto



Nikhil Gulati
USA
Global Head
Product Delivery,
MedTech Digital



Daniel Hashimoto
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Assistant Professor
of Surgery University,
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Andrew Hung
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Vice Chair for Academic
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Nassir Navab
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Faculty

Speakers



Federico Nicolosi
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Chief Technology Officer,
Moon Surgical



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Darren Porras
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Market Development
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**Gretchen Purcell
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Vice President, Scientific
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Emanuele Ruffaldi
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SW Engineering Director,
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Massimiliano Simi
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CoFounder & VP Research
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Chief of Surgery,
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Daniel Sereduick
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Gaya Spolverato
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Professor of Surgery,
University of Padua



Danail Stoyanov
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Professor of Robot Vision,
WEISS Centre,
UCL Computer Science,
London



Elliot Street
USA
CEO, Inovus Medical



Lee Swanstrom
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Scientific Director of IHU,
Strasbourg



Pietro Valdastrì
UK
Professor of Robotics
and Autonomous Systems,
University of Leeds



Richard Vincent
UK
CEO, FundamentalVR



Erik Wilson
USA
Professor and Vice Chair
of Surgery at UT,
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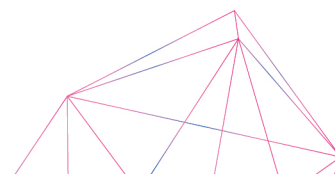
Andrew Yee
USA
Medical Science Manager,
Intuitive Surgical
Sunnyvale, CA



Mariavittoria Zaglio
Italy
Television journalist,
Class CNCB

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Thursday September 19th

Hotel I Portici, Bologna

5.00^{PM} - 6.00^{PM} Sponsored Symposium

Intuitive Surgical/AB Medica fireside chat: Redefining the future of robotic surgery

Moderator: **Mariavittoria Zaglio**

Surgeon perspective on utilization and impact of AI
Filippo Filicori

Engineer Intuitive - The future is now (focus on innovative technologies, digital and remote learning)
Anthony Jarc

Hospital IT Hi-Tech integrated hospital. Management of resources and infrastructures
Elena Bottinelli

Legal Data protection in robotic surgery. The era of Digital
TBD speaker

6.00^{PM} - 8.00^{PM}

Welcome reception and drinks

Friday September 20th

8.00^{AM} - 6.00^{PM}

Welcome and Meeting Presentation

Filippo Filicori, Gilberto Poggioli

Procedural innovation through vision

8.30^{AM} - 9.30^{AM}

Real time Computer Vision is getting REAL

Moderators: Erik Wilson and Filippo Filicori

Anatomical segmentation and 2D to 3D rendering in RT
RT Critical view of safety
RT Visual question answering during surgery with Nvidia Holoscan
Context Awareness for safer surgical intervention
RT Operating room state detection

Danail Stoyanov (10min.)
Pietro Mascagni (10min.)
Mahdi Azizian (10min.)
Elena De Momi (10min.)
Teodor Grantcharov (10min.)

9.30^{AM} - 10.30^{AM}

Real-Time model application on live surgery from S. Orsola Hospital (Bologna)

Prof. Riccardo Schiavina
Robot-Assisted Partial Nephrectomy (RAPN)

Moderators: Andrew Hung, Ivo Broeders
Discussants: Andrea Mari, Mahdi Azizian.

RT application of AR for solid tumor detection in parenchymal organs
Pieter DeBacker (15min.)

Discussion: technical, practical and regulatory challenges in implementation of Real Time Modelling in the Operating Room, the road to clinical trials.

10.30^{AM} - 11.00^{AM} Coffee Break

11:00^{AM} - 12:00^{PM}

Can AI tell me if you're a good surgeon?

Moderators: Gretchen Purcell Jackson and Pietro Valdastrì

Fairness and bias mitigation in the 360 evaluation of a surgeon
Proficiency metrics in surgical evaluation
Surgical Quality Assessment (SQA)
Holistic OR modelling
Efficiency of surgical approach in pituitary surgery and learning curves

Andrew Hung (10min.)
Teodor Grantcharov (10min.)
Pietro Mascagni (10min.)
Nassir Navab (10min.)
Daniel Donoho (10min.)

Friday September 20th

Procedural innovation through vision

SESSION 4

12:00^{PM} - 1:00^{PM}

RFD (Rapid Fire Debates part 1):

Moderators: **Filippo Filicori** and **Anthony Jarc**

Open source datasets vs closed datasets
Edge computing vs cloud computing
Supervised learning vs unsupervised learning

Gretchen Purcell Jackson vs Daniel Donoho (5+5+5 min.)
Mahdi Azizian vs Teodor Grantcharov (5+5+5 min.)
Daniel Hashimoto vs Andrew Hung (5+5+5 min.)

1.00^{PM} - 2.00^{PM} Lunch Break

SESSION 5

2.00^{PM} - 3.10^{PM}

Data pipelines: Instructions for use

Moderators: **Daniel Hashimoto** and **Danail Stoyanov**

Creating the right taxonomy and streamlining your annotation process
It's not so easy: considerations for integrating and connecting systems in the Digital OR
How to select the right engineering team
Building your infrastructure: cloud vs edge computing vs. RAG models
Multimodal models and new frontiers of computer vision
Label efficiency in computer vision pipelines and machine learning ops

Eric Landau (10min.)
Darren Porras (10 min.)
Daniel Hashimoto (10min.)
Keno März (10min.)
Andrew Hung (10min.)
Margaux Masson Forsythe (10min.)

SESSION 6

3.10^{PM} - 4.10^{PM}

How AI will change the way we practice procedural medicine

Moderators: **Christopher Schlacta**, **Margaux Masson** and **Emanuela Marcelli**

Computer vision for personalized maxillofacial surgery
Identification of lymphatic and connective tissues
Vision language models
Go-no go event detection for peroral myotomy
How to democratize surgical safety, the CVS challenge

Luigi Di Stefano (10min.)
Luigi Boni (10min.)
Nassir Navab (10min.)
Daniel Hashimoto (10min.)
Jennifer Eckhoff (10min.)

4.10^{PM} - 4.45^{PM} Coffee Break

Friday September 20th

Procedural innovation through vision

4.45^{PM} - 6.00^{PM}

The OR of the Future:

Moderators: **Nikhil Gulati** and **Ozanan Meireles**

Surgical Operating System
Integration of digital technologies in the OR
Large datasets and electronic medical record integration
VBA in the COLOR III trial - RCT on TaTME vs Lap Low Anterior
The role of a smart connectivity infrastructure for teleoperation, AI, and remote surgery
Creating the right pipeline for data management
A new Ecosystem for Robotic Surgery MMI

Ozanan Meireles (10 min)
Pietro Valdastrì (10min.)
Gretchen Purcell Jackson (10min.)
Jaap Bonjer (10min.)

Darren Porras (10min.)
Marc Paradis (10min.)
Emanuele Ruffaldi (10 min.)

SESSION 7

Saturday September 21th

8.00^{AM} - 6.00^{PM}

Procedural Innovation through positional data and simulation

8.00^{AM} - 9:00^{AM}

Kinematic data as ultimate performance evaluation tool

Moderators: **Vikrom Dhar** and **Elena De Momi**

The road to kinematic research, current and future applications
Automated retraction through DVrk
Breaking down technical performance with OPIs
New frontiers in stapling technologies and simulation
Enabling Actionable Objective Performance Indicators (OPIs)
Using Insights from Education and Coaching

Andrew Hung (10min.)
Pietro Valdastrì (10min.)
Anthony Jarc (10min.)
Sarah Choksi (10min.)

Andrew Yee (10min.)

SESSION 8

9.00^{AM} - 9.45^{AM}

EU vs. US: where is the best place to implement the AI revolution, the administrators perspective

Moderators: **Erik Wilson**, **Daniel Donoho**

Panelists: **Elena Bottinelli**, **TBD**, **Gene Coppa**, **Jaap Bonjer**, **Matthew Kroh**, **Carlo Milli**

SESSION 9

9.45^{AM} - 10.30^{AM}

RFD (Rapid Fire Debates part 2)

Moderators: **Elliot Street** and **Gretchen Purcell Jackson**

Remotely operated robots vs. autonomous robots
Haptics vs. no haptics in surgery
Haptics vs. no haptics in simulation

Chris Schlacta vs **Pietro Valdastrì** (5+5+5 min)
Anthony Jarc vs **Erik Wilson** (5+5+5 min)
Elliott Street vs **Andrea Moglia** (5+5+5 min)

SESSION 10

10.30^{AM} - 11.00^{AM} Coffee Break

11.00^{AM} - 12.00^{PM}

Novel Robotic Platforms and tools

Moderators: **Lee Swanstrom** and **Steve Bell**

Alternative robotics
Automated colonoscopy
Symani - The surgical robot for open microsurgery
DaVinci 5
Medtronic Hugo
Moon Surgical

Lugi Boni (10min.)
Pietro Valdastrì (10min.)
Massimiliano Simi (10 min)
Andrew Hung (10min.)
Matteo Rottoli (10min.)
David Noonan (10 min.)

SESSION 11

Saturday September 21th

Procedural Innovation through positional data and simulation

12.00^{PM} - 1.00^{PM} Sponsored Symposium

Johnson & Johnson MedTech: Unlocking the Power of Data in the OR

Polyphonic digital ecosystem and potential to scale AI

Ivo Broeders (10 min.)

AI application for Improving Workflow, Learning, Procedure planning

PhD Students (15 min.)

- AI based pelvic measurements in preparation for rectal cancer surgery
Simon Baltus
- Automated action detection for OR efficiency purposes
Beerend Gerats
- AI based video analysis for benchmarking and life long learning
Julian Abbing

Data Security as an enabler to scaling data science

Ashley Mancuso (5 min.)

Panel: Barriers to scale and adoption for AI and Computer Vision in Surgery

Nikhil Gulati (20 min.)

1.00^{PM} - 2.00^{PM} Lunch Break

2.00^{PM} - 3.00^{PM}

New frontiers of surgical simulation

Moderators: **Andrea Moglia, Andrew Hung and Gretchen Purcell Jackson**

Synthetic Data in Surgical Simulation

VR simulation as a screening tool for the selection of surgeons

Empowering Next-Gen Surgeons: AI-driven simulation for skill mastery and certification.

DUTCH Trial - substituting 50% learning with digital and simulated training

The Synergy of Surgical Simulation and Artificial Intelligence

(Surgical Science)

Fundamental VR

Elliot Street (10min.)

Andrea Moglia (10min.)

Federico Nicolosi (10 min.)

Jaap Bonjer (10min.)

Anders Larsson (10min.)

Richard Vincent (10min.)

3.00^{PM} - 4.00^{PM}

Medicolegal, Infrastructure and Regulatory

Moderators: **Teodor Grantcharov and Daniel Donoho**

Regulation around AI the EU and US perspective

IP and data ownership

Security of Healthcare Information in the Cloud

Bias and AI

The data marketplace and data open sourcing

Gherardo Carullo (10min.)

Chiara Formenti Ujlaki (10min.)

Daniel Sereduick (10min.)

Gaya Spolverato (10min.)

Margaux Masson Forsythe (10min.)

Saturday September 21th

Procedural Innovation through positional data and simulation

4.00^{PM} - 4.30^{PM} Coffee Break

4.30^{PM} - 5.30^{PM}

The OR of the Future:

Moderators: Erik Wilson and Nassir Navab

Integrating the data pipeline into the operating room
Custom AR/VR team simulation
AI and the ultimate endoluminal frontier
AI and surgical robotics: real applications in today's world
Fluorescence, Real Time pathology and AI applications
in Gastroesophageal Oncology
The power of digital surgery

Teodor Grantcharov (10min.)
Daniel Hashimoto (10min.)
Gennaro Giustino (10min.)
Steve Bell (10min.)

Hans Fuchs (10min.)
Karen Kerr (10min.)

5.30^{PM} - 6.00^{PM} Final remarks

SESSION 14

AI²M

First annual Artificial Intelligence
and Innovation in Medicine Meeting

The goal of the first Artificial Intelligence and Innovation Meeting (AI²M) is to bring together clinicians and engineers to develop integrated solutions and to deliver healthcare products that leverage all the knowledge in computer science developed over the last decades. AI²M specifically focuses on procedural medicine leveraging all sources of data that can be collected in this space to improve clinical outcomes, safety, and efficiency.

In addition to these goals the meeting will have a specific focus on robotic surgery and surgical simulation. Despite the recent rise in robotic surgery popularity, the platform is merely used as an extended limb for the surgeon, and we do not capitalize on the immense amount of data collected (video, kinematic) to improve surgical outcomes.

The meeting will also have a specific focus on regulatory and medicolegal issues related to data and AI in the healthcare space, as well as roundtables with regulators and administrators to allow to discuss opportunities to increase the pace of implementation of such technologies.

We believe that Europe, being of an incredible receptacle for healthcare and engineering talent is the right place to hold such a meeting.

Please join a stellar faculty roster of leaders from US/Europe from both Healthcare and Tech spaces in Bologna, Italy for the inaugural event of this medicine/engineering joint venture. The meeting will be hosted in “the food capital of Italy” during one of the best possible season to visit this country.

Filippo Filicori
*System Chief Surgical Innovation
Northwell Health*

Gilberto Poggioli
*Full Professor of Surgery
University of Bologna*

The AI2M First annual Artificial Intelligence and Innovation in Medicine Meeting

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