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Advanced Prototype for an Automated Version of the Robotic IV Pole

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► **To cite this version:**

Nancy Kozah, Abbas Sayed-Kassem, Georges Hajj Moussa, Amira J. Zaylaa. Advanced Prototype for an Automated Version of the Robotic IV Pole . Lebanese International University Engineering Exhibition 2018, May 2018, Beirut, Lebanon. inserm-01781039

HAL Id: inserm-01781039

<https://inserm.hal.science/inserm-01781039v1>

Submitted on 29 Apr 2018

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Department of Biomedical Engineering

Advanced Prototype for an Automated Version of the Robotic IV Pole

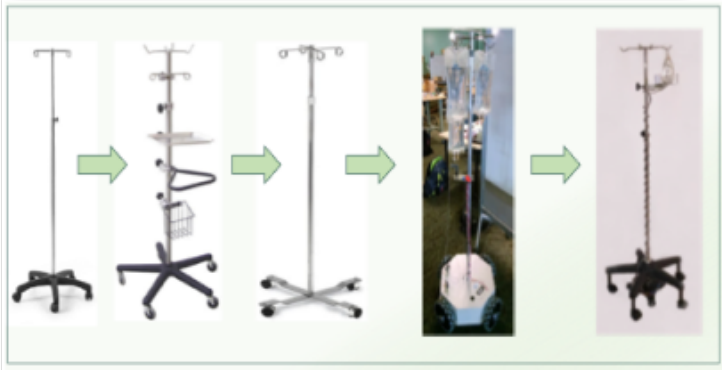
Nancy A. Kozah, Abbas H. Sayed-Kassem, Georges J. Hajj Moussa, and

Dr. Amira Zaylaa



Introduction

Intravenous (IV) poles are devices used to provide care and deliver medications to patients. IV poles are used on a daily basis in different departments in hospitals. IV pole types are: Commercial and Robotic.

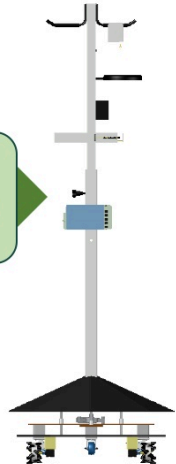


Methodology and Robotic IV Pole Prototype

Robotic Base Design and Manufacturing
Stand Design and Manufacturing

Electronics Implementation and Coding

Placement of the: -Camera -Motors
-Connection -Scale Connection and Calibration
-Flowmeter Calibration -MAX30105 Connection -Flow Control
Placement and Calibration-NodeMCU Connection



Problem Statements

The existing commercial IV poles impose a constraint on the patient's motion while dragging the pole.

Consume the nurses' time while helping the patient, or while checking the the IV bag, and might give inaccurate measurements

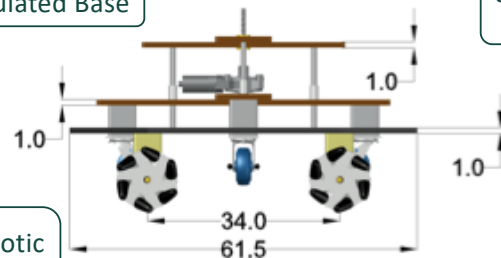
The existing Robotic IV poles lack the monitoring of different parameters related to the IV bag status

Robotic IV poles are not fully automated

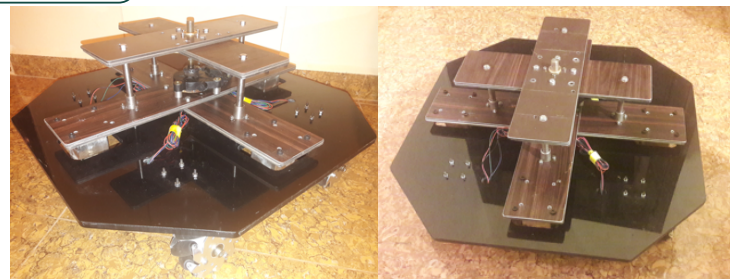
Prototype Simulation and Experimental Results

Simulated Base

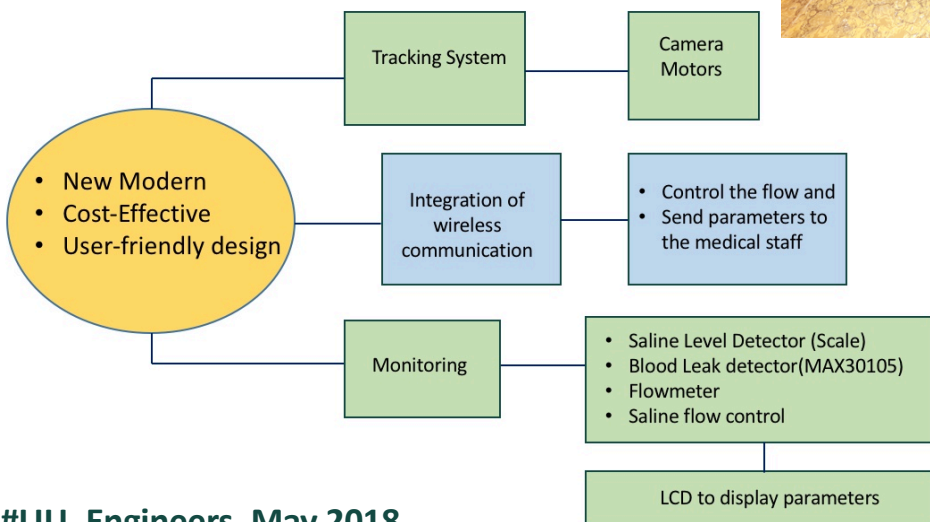
Simulated fluid meter



Real Robotic IV Base



Objectives



Conclusion

Prototype's simulation showed the best fit of the different parts

The real base of the new robotic IV pole was carefully developed

Implementation of the other real parts will be our next step