

Kenan Niu
Assistant Professor
Robotics and Mechatronics
Digital Society Institute
TechMed Centre

Employment

Assistant Professor
Robotics and Mechatronics
University of Twente
1 Jul 2023 → present

Assistant Professor

Digital Society Institute
University of Twente
1 May 2022 → present

Assistant Professor

TechMed Centre
University of Twente
1 May 2022 → present

Research outputs

Physiological Motion Compensation for Neuroscience Research based on Electrical Bio-Impedance Sensing

Zhang, Y., Verschooten, E., Ourak, M., Van Assche, K., Borghesan, G., Wu, D., Niu, K., Joris, P. X. & Poorten, E. V., 15 Oct 2023, In: *IEEE sensors journal*. 23, 20, p. 25377-25389 13 p.

State-of-the-Art of Non-Radiative, Non-Visual Spine Sensing with a Focus on Sensing Forces, Vibrations and Bioelectrical Properties: A Systematic Review

Timmermans, M., Massalimova, A., Li, R., Davoodi, A., Goossens, Q., Niu, K., Poorten, E. V., Fürnstahl, P. & Denis, K., Oct 2023, In: *Sensors*. 23, 19, 30 p., 8094.

Robot-assisted ultrasound reconstruction for spine surgery: from bench-top to pre-clinical study

Li, R., Davoodi, A., Cai, Y., Niu, K., Borghesan, G., Cavalcanti, N., Massalimova, A., Carrillo, F., Laux, C. J., Farshad, M., Fürnstahl, P. & Poorten, E. V., Sept 2023, In: *International journal of computer assisted radiology and surgery*. 18, 9, p. 1613-1623 11 p.

Development of Robot-assisted Ultrasound System for Fetoscopic Tracking in Twin to Twin Transfusion Syndrome Surgery

Cai, Y., Davoodi, A., Li, R., Ourak, M., Niu, K., Deprest, J. & Poorten, E. V., 25 May 2023, *2023 International Symposium on Medical Robotics, ISMR 2023*. IEEE

RL-Based Guidance in Outpatient Hysteroscopy Training: A Feasibility Study
Poliakov, V., Niu, K., Poorten, E. V. & Tsetserukou, D., 26 Nov 2022.

An Augmented Reality-Based Interaction Scheme for Robotic Pedicle Screw Placement

Vörös, V., Li, R., Davoodi, A., Wybailie, G., Poorten, E. V. & Niu, K., 6 Oct 2022, In: *Journal of imaging*. 8, 10, 273.

Deep-Learning-Based Compliant Motion Control of a Pneumatically-Driven Robotic Catheter

Wu, D., Ha, X. T., Zhang, Y., Ourak, M., Borghesan, G., Niu, K., Trauzettel, F., Dankelman, J., Menciassi, A. & Poorten, E. V., Oct 2022, In: *IEEE Robotics and automation letters*. 7, 4, p. 8853-8860 8 p., 9807375.

An In-Office Hysteroscopy VR/Haptic Simulation Platform for Training in Spatial Navigation and Passage of the Cervical Canal
Poliakov, V., Niu, K., Tsetserukou, D. & Poorten, E. V., Aug 2022, In: *IEEE Transactions on Medical Robotics and Bionics*. 4, 3, p. 608-620 13 p.

Deep-learning-based Position Control of a Robotic Catheter under Environmental Contact
Wu, D., Zhang, Y., Ourak, M., Ha, X. T., Niu, K., Dankelman, J. & Poorten, E. V., 28 Jun 2022, *2022 International Symposium on Medical Robotics, ISMR 2022*. IEEE, 7 p. (2022 International Symposium on Medical Robotics, ISMR 2022).

Quantitative Assessment of Calibration Motion Profiles in Robotic-Assisted Ultrasound System
Schoovaerts, M., Li, R., Niu, K. & Poorten, E. V., 28 Jun 2022, *2022 International Symposium on Medical Robotics, ISMR 2022*. IEEE, (2022 International Symposium on Medical Robotics, ISMR 2022).

RL-Based Guidance in Outpatient Hysteroscopy Training: A Feasibility Study
Poliakov, V., Niu, K., Poorten, E. V. & Tsetserukou, D., 2022, *2022 IEEE International Conference on Robotics and Biomimetics, ROBIO 2022*. Piscataway, NJ: IEEE, p. 2171-2176 6 p.

A Method Based on 3D Shape Analysis Towards the Design of Flexible Instruments for Endoscopic Maxillary Sinus Surgery
Legrand, J., Niu, K., Qian, Z., Denis, K., Vander Poorten, V., Van Gerven, L. & Vander Poorten, E., Jun 2021, In: *Annals of biomedical engineering*. 49, 6, p. 1534-1550 17 p.

Hysteresis Modeling of Robotic Catheters Based on Long Short-Term Memory Network for Improved Environment Reconstruction
Wu, D., Zhang, Y., Ourak, M., Niu, K., Dankelman, J. & Poorten, E. V., Apr 2021, In: *IEEE Robotics and automation letters*. 6, 2, p. 2106-2113 8 p., 9360444.

A uniaxial force and stiffness model of the vagina during laparoscopic sacrocolpopexy
De Smet, J., Page, A., Deprest, J., Housmans, S., Niu, K. & Vander Poorten, E., Jan 2021, In: *Clinical biomechanics*. 81, 7 p., 105204.

A Framework for Fast Automatic Robot Ultrasound Calibration
Li, R., Niu, K. & Poorten, E. V., 2021, *2021 International Symposium on Medical Robotics, ISMR 2021*. IEEE

Comparative Quantitative Analysis of Robotic Ultrasound Image Calibration Methods
Li, R., Cai, Y., Niu, K. & Poorten, E. V., 2021, *2021 20th International Conference on Advanced Robotics, ICAR 2021*. IEEE, p. 511-516 6 p.

A Virtual Reality Surgical Training System for Office Hysteroscopy with Haptic Feedback: A Feasibility Study
Poliakov, V., Niu, K., De Vree, B. P., Tsetserukou, D. & Vander Poorten, E., 2020, *Virtual Reality and Augmented Reality - 17th EuroVR International Conference, EuroVR 2020, Proceedings*. Bourdot, P., Interrante, V., Kopper, R., Olivier, A-H., Saito, H. & Zachmann, G. (eds.). Springer, p. 115-127 13 p. (Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics); vol. 12499 LNCS).

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A novel ultrasound-based lower extremity motion tracking system
Niu, K., Sluiter, V., Homminga, J., Sprengers, A. & Verdonschot, N., 11 Oct 2018, *Intelligent Orthopaedics: Artificial Intelligence and Smart Image-guided Technology for Orthopaedics*. Zheng, G., Tian, W. & Zhuang, X. (eds.). Springer, p. 131-142 12 p. (Advances in Experimental Medicine and Biology; vol. 1093).

Towards functional pre-planning in orthopaedic surgery

Verdonschot, N., Sprengers, A., Mazzoli, V., Marra, M., Gijsbertse, K., Chen, H., Niu, K., Naghibi, H. & Janssen, D., 5 Sept 2018.

Measuring relative positions and orientations of the tibia with respect to the femur using one-channel 3D-tracked A-mode ultrasound tracking system: A cadaveric study

Niu, K., Homminga, J., Sluiter, V., Sprengers, A. & Verdonschot, N., 1 Jul 2018, In: Medical engineering & physics. 57, p. 61-68 8 p.

Feasibility of A-mode ultrasound based intraoperative registration in computer-aided orthopedic surgery: A simulation and experimental study

Niu, K., Homminga, J., Sluiter, V. I., Sprengers, A. & Verdonschot, N., 13 Jun 2018, In: PLoS ONE. 13, 6, 0199136.

In situ comparison of A-mode ultrasound tracking system and skin-mounted markers for measuring kinematics of the lower extremity

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A Novel Tibiafemoral Kinematics Measurement System Based on Multi-Channel A-Mode Ultrasound System

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The relation between the number of a-mode ultrasound sampled points and the registration accuracy and robustness on computer aided orthopedic surgery

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A medical image navigating system with iPad

Niu, K., Bao, N. & Kang, Y., 2012, ICCH 2012 Proceedings - International Conference on Computerized Healthcare. Piscataway, NJ: IEEE, p. 5-8 4 p. 6724461

Activities

A-Mode Ultrasound-Based Intraoperative Registration Accuracy Analysis Based On Stimulation Environment

K. Niu (Speaker), J. Homminga (Contributor) & N. Verdonschot (Contributor)

5 Jul 2015