

## SpineGuard's DSG® technology applied to robotics: three scientific articles presented at the Conference on New Technologies for Computer and Robot Assisted Surgery (CRAS)

**PARIS and BOULDER (CO), May 4, 2022** – 6:00pm CEST - **SpineGuard** (FR0011464452 – ALSGD), an innovative company that deploys its DSG® (Dynamic Surgical Guidance) sensing technology to secure and streamline the placement of bone implants, announced that research teams presented three articles at the CRAS conference on April 25<sup>th</sup> and 26<sup>th</sup> in Naples, Italy. They report the progress made with the robotic application of DSG.

**Stéphane Bette, co-founder and Deputy CEO of SpineGuard, said:** *"The acceptance of these articles in a reference conference of the sector is a new validation by the scientific community of the value and feasibility in using DSG to enhance surgical robots in orthopedics. It also displays the richness of our collaboration with ISIR and hospital practitioners, that continues to our great satisfaction. We are delighted to see the communication of the results of the first electrical conductivity data collection in patient tissues as initiated late 2020 thanks to DSG Connect. The analysis of such data is carrying significant added value in the field of robotics in order to assist surgeries, as much as in bone quality measurement to help with patient treatment during and after the procedure."*

DSG is based on the local measurement of electrical conductivity of tissues in real time without X-ray imaging, with a sensor located at the tip of the drilling instrument. Its efficacy was proven by more than 85,000 surgeries across the globe and 19 scientific publications. SpineGuard has entered in 2017 a collaboration with the ISIR (Institut des Systèmes Intelligents et de Robotique) lab of Sorbonne University, CNRS and INSERM, for the application of DSG to surgical robots and the enhancement of their safety, accuracy, and autonomy.



CRAS (Conference on New Technologies for Computer and Robot Assisted Surgery) founded in 2011 has become one of the most recognized scientific conferences in the field of robot assisted surgery. Its goals are to strengthen the collaboration between the different research groups to boost the efficacy and shorten the development cycle, in a context where numerous technologies applicable to robotics have not made their way into operating rooms yet.

Three papers were presented at CRAS conference:

1. The first paper, presented in plenary session, is the fruit of the collaboration between Trousseau Hospital, ISIR and SpineGuard. Entitled *"Toward automatic bone breach detection for spine surgery using tissue bio-electrical conductivity sensing"*, it presents the outcomes of the first intraoperative collection of tissue electrical conductivity data during pedicle drillings in a series of scoliosis patients.
2. The second paper, presented as a poster and entitled *"Automatic bone breach detection for spine surgery based on bio-electrical conductivity sensing: Ex-vivo experimental validation"* presents the results of bone breach detection and automatic stop of a vertebral drilling performed by a robot.

3. The third one, in the form of a poster as well, entitled "*Force control of the KUKA LBR Med without external force sensor*" describes a specific control mode that allows the robot to optimize utilization of DSG in order to detect the breach, and to follow the respiratory motion cycle during drilling.

These two posters and described algorithms are the fruits of the collaboration between SpineGuard and ISIR. Part of this work received funding from the European Union's Horizon 2020 research and innovation program, in the context of the FAROS project (Functional Accurate Robotic Surgery) under grant agreement No 101016985.



#### About SpineGuard®

Founded in 2009 in France and the USA by Pierre Jérôme and Stéphane Bette, SpineGuard is an innovative company deploying its proprietary radiation-free real time sensing technology DSG® (Dynamic Surgical Guidance) to secure and streamline the placement of implants in the skeleton. SpineGuard designs, develops and markets medical devices that have been used in over 85,000 surgical procedures worldwide. Nineteen studies published in peer-reviewed scientific journals have demonstrated the multiple benefits DSG® offers to patients, surgeons, surgical staff and hospitals. Building on these strong fundamentals and several strategic partnerships, SpineGuard has expanded the scope of its DSG® technology in innovative applications such as the « smart » pedicle screw, the DSG Connect visualization and registration interface, dental implantology and surgical robotics. DSG® was co-invented by Maurice Bourlion, Ph.D., Ciaran Bolger, M.D., Ph.D., and Alain Vanquaethem, Biomedical Engineer. SpineGuard has engaged in multiple ESG initiatives.

For further information, visit [www.spineguard.com](http://www.spineguard.com)

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