The ACM Siggraph 2001 and 2003 saw Geometric Algebra (GA) featured in the form of a Keynote and a Course. Since then the GA community has highlighted the benefits of employing W. K. Clifford's GA, quaternions and octonions for computer graphics and vision problems. The advances were presented at the Workshops CGI'2016 on "Geometric Algebra in Computer Science and Engineering" and every year at CGI'2017-2020 on "**E**mpowering **N**ovel **G**eometric **A**lgebra for **G**raphics & **E**ngineering (ENGAGE)" and have underlined the power of GA for analysis and computation. The Siggraph 2019 course on PGA and GAME2020, further boost GA and associated algebras as a language for Graphics.

Under the auspices of **CGI'21** (6-10 Sep. 2021), ENGAGE 2021 on **Sep. 6th** in Geneva, Switzerland, will again provide a multi-disciplinary approach from mathematics applied to computer graphics, computer vision and general computer science fields, where GA has strong potential to answer existing mathematical problems. ENGAGE 2021 online participation, e.g. for AGACSE 2021 participants and others will be possible.

Geometric algebra is particularly well suited to allow cross-disciplinary solutions in software engineering as it provides an intuitive and insightful common denominator across mathematical disciplines used in a variety of applications. Understanding GA enables us to relate distinct, seemingly incompatible paths by providing a common geometric and mathematical base.

We invite original contributors in the form of full and short papers, which advance the state-of-the-art in both the application of geometric algebra and its instantiation in software and hardware. **Topics will include, but are not limited to**:

- ➢ Feature detection & Data analysis
- ➢ LIDAR and point cloud algorithms
- ➢ Scientific & Information visualization
- ➢ Computer graphics rendering
- ➢ Computer animation and video processing
- ➢ Holographic optics & Holographic maps
- ➢ Geographic information systems GIS
- ➢ Soundscape & Electromagnetic landscape modelling
- ➢ Augmented and virtual reality
- ➢ Application of Clifford Fourier transforms and Clifford wavelets to 2D and 3D images, including color images
- ➢ Higher dimensional geometric algebras
- ➢ GA computing and quantum computing
- ➢ GA hardware implementations
- ➢ GA for artificial intelligence
- ➢ GA for ubiquitous information processing
- ➢ GA for Big Data processing & visualization
- ➢ Other engineering/science applications using GA

Authors should submit *short and full papers* directly to the CGI conference LNCS proceedings, by June 1st. All authors of accepted ENGAGE related papers will be invited either to an oral or poster presentation. For Springer LNCS CGI proceedings author instructions please refer to http://www.cgs-network.org/cgi21/#callforpapers

Post workshop *extended* and more *advanced* ENGAGE *papers* (15 pages plus) can be published in a topical collection of the journal Advances in Applied Clifford Algebras (AACA), published by Birkhauser, and should have been orally presented at the conference. See the "Instruction for Authors" at AACA. Online paper submission at https://www.editorialmanager.com/aaca/Default.aspx has a deadline of Dec. 31, 2021. At the time of submission, authors must indicate the topical collection "TC ENGAGE Geometric Algebra for Computing, Graphics and Engineering".

IMPORTANT DATES
All participants:
- Abstract submission (ca. 200 words): **Extended to *June 11, 2021*** to a.aristidou@ieee.org

Full and Short ENGAGE Papers: (to appear in Springer LNCS proceedings, full 8-12 pages and short 5-7 pages)
- Paper submission: ***June 12, 2021 (new!)***
- Paper notification: *June 30, 2021*
- Camera ready papers due: *July 20, 2021*

Full AACA Papers: (15 pages+, Latex using birkjour.cls)
- Paper submission: *Dec. 31, 2021*

For **further information**, please contact the organizers:
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(♯ = local workshop organizers)