

SUMMARY

Artist, designer, inventor, engineer, research scientist.

Keith's formal training is in the engineering sciences, and his lifelong passion lies in the visual arts. He works on problems across this spectrum and finds one discipline enriches the other.

ENGINEERING EDUCATION

Ph.D. Mechanical Engineering, Purdue University, 2005

M.S. Mechanical Engineering, Purdue University, 2002

B.S. Mechanical Engineering, University of Portland, 1999

ART EDUCATION

Classes and Workshops at Art Center College of Design, University of California San Diego, San Diego State University, Woodbury School of Architecture, Mesa College, City College, and online courses. Extensive independent study in drawing, painting, art history, photography, rendering, product design, graphic design, typography, and calligraphy.

TECHNICAL OVERVIEW

Keith's engineering and research pursuits have mostly been focused on contributing to innovations in space exploration. For example, he supported Mars rover mobility system development by running multi-body dynamic simulations of touchdown scenarios to ensure safe landing. His research in advanced thermoelectric materials has promoted discovery in deep space power generation. Keith's design of the primary structure for a rocket launching system has enabled engineers to put instrumentation like communications satellites into orbit. Keith's doctoral research led to advancements in our understanding of the fatigue performance of aluminum alloys, with implications for aircraft safety and fleet management. Keith's technical competencies include mechanical systems design (structures and mechanisms), parametric computer-aided design, algorithmic modeling, machining and prototyping, manufacturing, test engineering, quantitative electron microscopy, materials science, failure analysis/fractography, ANSYS finite element analysis, ADAMS multi-body dynamics, MATLAB programming, patent law, and technical writing.

CREATIVE OVERVIEW

Keith's creative pursuits have included re-imagining multiple everyday objects, including, for example, designing lines of sculptural tables, lighting systems, and clocks. A prominent focus for Keith has also been inventing and patenting a means of displaying large-scale segmented art. This versatile art presentation platform has given rise to numerous additional products. Keith has skills and abilities in drawing, painting, graphic design, calligraphy, photography, photo editing, industrial printing, videography, art curation, SolidWorks, Rhinoceros3D, Grasshopper, Brazil, Adobe Creative Cloud, Procreate, woodworking/woodfinishing, web programming, brand identity creation and development, and packaging design.



FEATURED ART PROJECTS/EVENTS

Art Walk Community Art Festival, San Diego, California; April 26 - 27, 2025.

Cicada Fine Art, Gallery Show, Palm Springs, California; February-March 2025.

American Society of Interior Designers, Industry Partner Expo; April 22, 2025.

Invited Speaker, San Francisco Museum of Modern Art; Berkeley Art, Finance, and Law Symposium; May 16, 2024.

San Diego Design Expo; May 20, 2023.

Borrego Art Institute, Gallery Show, Borrego Springs, California; November 5 - 27, 2022.

Art Walk Community Art Festival, San Diego, California; April 30 - May 1, 2022.

Earth Day Community Art Engagement Project, Balboa Park, San Diego, California; April 28, 2019.

Commissions:

San Diego, CA (2011-2025)

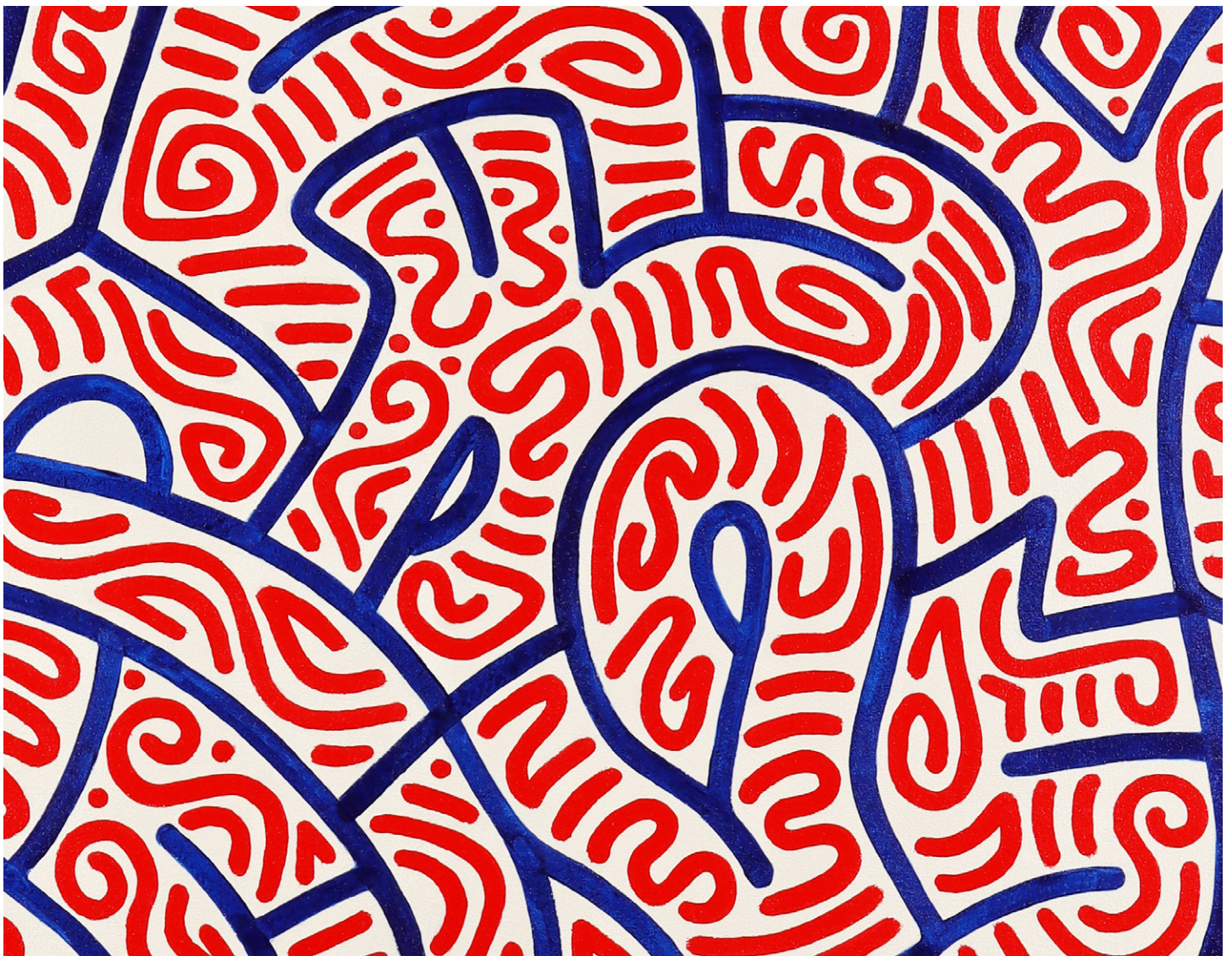
Los Angeles, CA (2023)

Washington, D.C. (2024)

Denver, CO (2024)

West Palm Beach, FL (2025)

Oakland, CA (2025)



PROFESSIONAL ENGAGEMENT

Artist, Designer, Engineer

VAN DER WALDE DESIGN, LLC. (2012 - present)

San Diego, CA

Blended art and engineering practice focused on creating original painted works, developing and commercially deploying cable-suspended art systems, and providing engineering support for NASA/JPL interplanetary missions. Keith's patented cable-suspended art system serves as the basis for multiple large-scale commercial art installations and has inspired the development of an array of related products. His parallel work in art curation and site design has enabled him to assist in transforming the spaces of his corporate clients. Keith's paintings bring levity and vibrancy to his collectors around the world, while his aerospace engineering work draws from the same creative spirit and makes use of his background in research, physics-based analysis, and data visualization. Keith's industrial design work includes creating luminaires, clocks, and sculptural furnishings, alongside consulting in transportation, entertainment, and apparel industries.

Select References

- (1) Puskar, C., Abid, M., van der Walde, K., and Williams, E., "Mars Launch System and the Rotational Stability of a Prolate, Spin-Stabilized Spacecraft," IEEE Aerospace Conference, Big Sky, Montana (2024).
 - (2) van der Walde, Keith. Sculptural Panel, United States Patent No. D943,118 S (2020).
 - (3) van der Walde, Keith. Suspended Segmented Display Array with Low Visibility Hardware, United States Patent No. 10,646,059B1 (2018).
 - (4) van der Walde, Keith. Suspended Segmented Display Array United States Patent No. 9,723,732 (2017).
 - (5) van der Walde, Keith. Suspended Segmented Display Array United States Patent No. 9,311,836 (2016).
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Aerospace Engineer

ATA Engineering, Inc. (2006 - 2011)

San Diego, CA

Worked as a designer, analyst, project manager, and business developer in entrepreneurial environment at mechanical engineering consulting firm. Provided research and engineering support for robotic space exploration, structural/mechanism design and analysis, and advanced aerospace materials development. Supported projects for NASA Johnson Space Center, NASA Jet Propulsion Laboratory, and Orbital Sciences Corporation. Performed dynamic simulations of Mars Science Laboratory (Curiosity Rover) landing event in support of vehicle test and development programs, including performing high-fidelity probabilistic studies of rover response to off-nominal landing events. Designed principal structure of commercial spacecraft launch system, including performing loads characterization, structural engineering, and design optimization (topological and algorithmic) as well as leading the team of engineers designing the subsystems. Performed research on thermoelectric materials and created advanced computational tools to predict performance in uncouple configurations, including quantification of the stress response along stacked bimaterial interfaces and associated singularity characterization. Solved mechanical design and analysis problems related to space suits, highway vehicles, and theme park robotic motion simulators and animatronic figures.

Select References

- (1) White, C.V., van der Walde, K., and Tippmann, J., "A Computational Study of the MSL Rover Landing Capabilities," AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, 2010.
- (2) Ravi, V., Firdosy, S., Caillat, T., Brandon, E., van der Walde, K., Maricic, L., and Sayir, A., "Thermal Expansion Studies of Selected High-Temperature Thermoelectric Materials," Journal of Electronic Materials, Vol. 38, 1433-1442, 2009.
- (3) White, C.V., van der Walde, K., and Tippmann, J., "An Experimental Investigation of the Dynamics of the Mars Science Laboratory Rover Landing Event," AIAA/ASME Structures, Structural Dynamics, and Materials Conference, Schaumburg, IL, 2008.

PROFESSIONAL ENGAGEMENT (CONTINUED)

Doctoral Researcher

Purdue University (2002-2005)

West Lafayette, IN

Developed computational framework for modeling fatigue damage evolution in aerospace alloys for Alcoa, Division of Product Design and Analysis. Research drew from the disciplines of applied mechanics, materials science, computer programming, scanning electron microscopy, image analysis, statistical design of experiments, and test engineering. Performed failure analysis/fractography and coalescing crack growth modeling. Addressed problems in material system design with applications to aircraft fleet management.

Select References

- (1) van der Walde, K. and Hillberry, B.M., "Characterization of Pitting Damage and Prediction of Remaining Fatigue Life," International Journal of Fatigue, Vol. 30, 106-118, 2008.
 - (2) van der Walde, K. and Hillberry, B.M., "Initiation and Shape Development of Corrosion-Nucleated Fatigue Cracking," International Journal of Fatigue, Vol. 29, 1269-1281, 2007.
 - (3) van der Walde, K., Brockenbrough, J.R., Craig, B.A., and Hillberry, B.M., "Multiple Fatigue Crack Growth in Pre-Corroded 2024-T3 Aluminum," International Journal of Fatigue, Vol. 27, 1509-1518, 2005.
 - (4) van der Walde, K., "Corrosion-nucleated fatigue crack growth," Purdue University Doctoral Thesis. Advisor: Dr. Ben Hillberry, Subject Area: Mechanical Engineering, 2005.
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Teaching Assistant

Purdue University (2000-2002)

West Lafayette, IN

Directed and advised undergraduate engineering teams in the development of design projects for local community organizations. Taught workshops on machining and facilitated team discussions and team building activities. Led and trained other teaching assistants and supported facilities and processes improvements.

Engineering Internships

Freightliner Corporation & Boeing (1997-2000)

Portland, OR

Freightliner Materials and Mechanisms Group: Performed and documented mechanical testing of heavy-duty trucks. Conducted materials-based surface coating testing and developed associated test equipment.

Freightliner Vehicle Dynamics Group: Conducted vehicle ride dynamic characterization; executed modal analysis testing of multiple truck platforms. Performed all aspects of pretest planning, instrument calibration, data acquisition, postprocessing, and reporting.

Freightliner Service Engineering Group: Supported field service personnel by analyzing vehicle system malfunctions and providing technical solutions. Interfaced with Design Engineering to improve product quality and reliability.

Boeing Facilities Department: Coordinated machine moves and plant-wide safety projects. Supported engineers in developing manufacturing cells for landing gear hardware.