Adam P. Generale

CONTACT INFORMATION

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EDUCATION

Georgia Institute of Technology, Atlanta, GA, USA (exp.) 2024
Ph.D. Mechanical Engineering
- Thesis: "Stochastic Scale-Bridging and Inverse Microstructure Design"
- Advisor: Surya R. Kalidindi

University of Manchester, Manchester, UK 2014
M.S. Mechanical Engineering
- Thesis: "Generalized Deformation in Heterogeneous Materials in Mode I Fracture"
- Advisor: Andrey Jivkov

Rensselaer Polytechnic Institute, Troy, NY, USA 2011
B.S. Mechanical Engineering

RESEARCH EXPERIENCE

Georgia Institute of Technology, Atlanta, GA, USA Sep 2019 - Present
Graduate Research Assistant
- Focus on Bayesian statistics, Gaussian processes, and flow-based deep generative models as applied to data-driven materials exploration.

Air Force Research Laboratory, Dayton, OH, USA Jun 2020 - Oct 2020
Research Intern
- Developed framework for the statistical data fusion of sparse disparate experimental datasets in the simultaneous Bayesian calibration of a visco-elastoplastic multimode constitutive damage model.

PROFESSIONAL EXPERIENCE

Multiscale Technologies, Atlanta, GA, USA Jan 2023 - Present
Materials Data Scientist
- Built sparse variational multi-output Gaussian Processes for microstructure-sensitive property prediction and integration into the software platform.
- Consulted regarding sequential and batch active learning strategies in constructing optimal experimental designs.

Pratt & Whitney, East Hartford, CT, USA Feb 2016 - April 2020
Senior Aero/Thermal Engineer
- Designed internal cooling schemes through sequentially coupled thermo-mechanical models of HPT and LPT airfoils for the F135, and advanced military test demonstrator engines to ensure mission life requirements or test goals could be met.
- Performing topology optimization of internal cavity geometry, informed by constraints on thermal gradient, and coating surface and interface temperatures.

Chromalloy, Middletown, NY, USA Sep 2011 - Aug 2013 & Nov 2014 - Jan 2016
Process Engineer
- Spearheaded development projects including laser drilling, laser material deposition, selective material removal, and laser fusion welding in the production, assembly, and repair of advanced industrial gas turbine components.

AWARDS

CMS3 Fellowship, Texas A&M University	2023
Sloan Foundation Fellowship, Alfred P. Sloan Foundation	2020
President's Fellowship, Georgia Institute of Technology	2020
Team of the Quarter, Pratt & Whitney	Q2 2016, Q4 2017
Best Dissertation, University of Manchester	2014
Best Overall Performance, University of Manchester	2014

Rensselaer Leadership Award, Rensselaer Polytechnic Institute 2007

TECHNICAL KNOWLEDGE

Statistical Modeling, Data Analysis, Numerical Methods, Finite Element Analysis, Continuum Mechanics, High-Performance Computing

Software: ABAQUS, ANSYS, Fluent

Languages: Proficient: MATLAB, Python, LaTeX; Familiar: C/C++, Fortran

PUBLICATIONS

Wang, S., **Generale, A.P.**, Kalidindi, S.R., Joseph, V.R. (2023). Sequential Designs for Filling Output Spaces. *arXiv preprint*: arxiv.org/abs/2305.07202

Generale, A.P., Hall, R.B., Brockman, R.A., Joseph, V.R., Jefferson, G., Zawada, L., Pierce, J., Kalidindi, S.R. (2022). Bayesian calibration of continuum damage model parameters for an oxide-oxide ceramic matrix composite using inhomogeneous experimental data. *Mechanics of Materials*, 175, 104487. doi: 10.1016/j.mechmat.2022.104487.

Hall, R.B., Brockman, R.A., **Generale, A.P.**, Joseph, V.R., Kalidindi, S.R. (2022). A Viscous Damage Throey for Ceramic Matrix Composites in Multi-Axial Loading. *Proceedings of the 12th International Conference on the Mechanics of Time Dependent Materials*.

Generale, A.P., Kalidindi, S.R. (2021). Reduced-order Models for Microstructure-Sensitive Effective thermal Conductivity of Woven Ceramic Matrix Composites with Residual Porosity. *Compos. Structures*, 274, 114399. doi: 10.1016/j.compstruct.2021.114399

PATENTS

Jackson, R.W., **Generale, A.P.**, Liu, X., Zelesky, M.F., 2023. Airfoil having environmental barrier topcoats that vary in composition by location. US11608749B2.

Quach, S., **Generale, A.P.**, Surace, R., Dvorozniak, L., 2022. Engine with cooling passage circuit for air prior to ceramic component. US11492914B2.

Generale, A.P., Dvorozniak, L., Quach, S., 2022. Ceramic airfoil with cooling air turn. US11473444B2.

Generale, A.P., Dvorozniak, L., Quach, S., 2022. Baffle with impingement holes. US11415002B2.

Generale, A.P., Mongillo, D.J., 2022. Components for gas turbine engines. US11371360B2.

Quach, S., Dube, B.P., Propheter-Hinckley, T.A., Arisi, A.N., **Generale, A.P.**, Dvorozniak, L., Liles, H.J., 2022. Cooling arrangement including overlapping diffusers. US11339667B2.

Generale, A.P., Dvorozniak, L., Quach, S., Dube, B.P., 2022. Baffle with tail. US11280201B2.

Generale, A.P., Mongillo, D.J., 2022. Components for gas turbine engines. US11261749B2.

Generale, A.P., Mongillo, D.J., 2022. Trailing edge insert for airfoil vane. US11242758B2.

Generale, A.P., Propheter-Hinckley, T.A., 2021. Airfoil assembly with ceramic airfoil pieces and seal. US11162368B2.

Spangler, B.W., **Generale, A.P.**, Vu, K.H., 2021. Gas turbine engine cooling component. US11131212B2.

Generale, A.P., Liles, H.J., 2021. Airfoil with metallic shield. US11092015B2.

Generale, A.P., Dube, B.P., 2021. Thermal gradient reducing device for gas turbine engine component. US11078844B2.

Generale, A.P., Dube, B.P., 2021. CMC airfoil with cooling holes. EP3808940A1.

Spangler, B.W., **Generale, A.P.**, 2021. Shell and spar airfoil. US10934857B2.

Vu, K.H., **Generale, A.P.**, 2020. Vane platform leading edge recessed pocket with cover. US10822962B2.

Devore, M.A., **Generale, A.P.**, Propheter-Hinckley, T.A., 2020. Airfoil with geometrically segmented coating section. US10711624B2.

Spangler, B.W., **Generale, A.P.**, 2020. Axial flow cooling scheme with castable structural rib for a gas turbine engine. US10822963B2.

Mongillo, D.J., **Generale, A.P.**, 2020. Platform flow turning elements for gas turbine engine components. US10655496B2.

Spangler, B.W., **Generale, A.P.**, 2020. Gas turbine engine cooling component. US10648351B2.

Generale, A.P., Howard, B.L., 2020. Vane air inlet with fillet. US10619492B2.

Clum, C., **Generale, A.P.**, 2019. Adjustable flow split platform cooling for gas turbine engine. US1051 3947B2.

Thornton, L.M., **Generale, A.P.**, 2019. Vane including internal radiant heat shield. EP3567220B8.