

## Adam P. Generale

CONTACT INFORMATION	33-45 29th Street Astoria, NY 11106	<i>E-mail:</i> adam.generale@gmail.com <i>Phone:</i> (914) 646-5393
EDUCATION	<b>Georgia Institute of Technology</b> , Atlanta, GA, USA (exp.) 2024 <i>Ph.D. Mechanical Engineering</i> <ul style="list-style-type: none"><li>• Thesis: "Inverse Stochastic Scale-Bridging and Materials Design"</li><li>• Advisor: Surya R. Kalidindi</li></ul> <b>University of Manchester</b> , Manchester, UK 2014 <i>M.S. Mechanical Engineering</i> <ul style="list-style-type: none"><li>• Thesis: "Generalized Deformation in Heterogeneous Materials in Mode I Fracture"</li><li>• Advisor: Andrey Jivkov</li></ul> <b>Rensselaer Polytechnic Institute</b> , Troy, NY, USA 2011 <i>B.S. Mechanical Engineering</i>	
RESEARCH EXPERIENCE	<b>Georgia Institute of Technology</b> , Atlanta, GA, USA Sep 2019 - Present <i>Graduate Research Assistant</i> <ul style="list-style-type: none"><li>• Focus on flow-based generative models, Bayesian statistics, and Gaussian processes applied towards enabling data-driven materials exploration, multiscale modeling, and probabilistic model calibration.</li></ul> <b>Air Force Research Laboratory</b> , Dayton, OH, USA Jun 2020 - Oct 2020 <i>Research Intern</i> <ul style="list-style-type: none"><li>• Developed framework for the simultaneous Bayesian calibration of a visco-elastoplastic multimode constitutive damage model fusing information from disparate experimental measurements.</li></ul>	
PROFESSIONAL EXPERIENCE	<b>Multiscale Technologies</b> , Atlanta, GA, USA Jan 2023 - Present <i>Materials Data Scientist</i> <ul style="list-style-type: none"><li>• Developed sparse variational multi-output Gaussian processes for microstructure-sensitive property prediction, and integrated models in the software platform.</li><li>• Implemented active learning strategies for the construction of optimal experimental designs in the training of surrogate machine-learned models.</li></ul> <b>Pratt &amp; Whitney</b> , East Hartford, CT, USA Feb 2016 - April 2020 <i>Senior Aero/Thermal Engineer</i> <ul style="list-style-type: none"><li>• Designed internal cooling schemes through sequentially coupled thermo-mechanical models of turbine airfoils to meet mission life requirements.</li></ul> <b>Chromalloy</b> , Middletown, NY, USA Sep 2011 - Aug 2013 & Nov 2014 - Jan 2016 <i>Process Engineer</i> <ul style="list-style-type: none"><li>• Spearheaded development projects including laser drilling, material deposition, welding, and selective material removal in the production and repair of turbine airfoils.</li></ul>	
AWARDS	IMECE Student Travel Award, American Society of Mechanical Engineers 2023 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, Machine Learning, Data Analysis, Numerical Methods, Finite Element Analysis, Continuum Mechanics, High-Performance Computing <b>Software:</b> ABAQUS, ANSYS, Fluent, Star-CCM+ <b>Languages:</b> Proficient: Python ( <i>PyTorch</i> , <i>GPyTorch</i> ), MATLAB; Familiar: C/C++, Fortran	

- PUBLICATIONS** **Generale, A.P.**, Kelly, C., Harrington, G.R., Robertson, A.E., Buzzy, M., Kalidindi, S.R. (2023). A Bayesian Approach to Designing Microstructures and Processing Pathways for Tailored Material Properties. *NeurIPS AI for Accelerated Materials Design*.
- Generale, A.P.**, Robertson, A.E., Kelly, C., Kalidindi, S.R. (2023). Inverse Stochastic Microstructure Design. *SSRN Preprint*. doi: [10.2139/ssrn.4590691](https://doi.org/10.2139/ssrn.4590691).
- Generale, A.P.**, Kalidindi, S.R. (2023). Uncertainty quantification and propagation in the microstructure-sensitive prediction of stress-strain response of woven ceramic matrix composites. *Computers & Structures*, 286, 107110. doi: [10.1016/j.compstruc.2023.107110](https://doi.org/10.1016/j.compstruc.2023.107110).
- Wang, S., **Generale, A.P.**, Kalidindi, S.R., Joseph, V.R. (2023). Sequential Designs for Filling Output Spaces. *Technometrics*, 0, 1-12. doi: [10.1080/00401706.2023.2231042](https://doi.org/10.1080/00401706.2023.2231042)
- 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](https://doi.org/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 Theory 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](https://doi.org/10.1016/j.compstruct.2021.114399)
- PATENTS** Jackson, R.W., **Generale, A.P.**, Liu, X., Zelesky, M.F., 2023. Airfoil having environmental barrier top-coats 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. US10513947B2.
- Thornton, L.M., **Generale, A.P.**, 2019. Vane including internal radiant heat shield. EP3567220B8.