Current Address:
Charlottesville, VA
Looking to relocate.

AYODEJI BODE-OKE

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PROFESSIONAL SUMMARY

- Forward-thinking engineer with strong background in unsteady aerodynamics having 5+ years experience using computational and experimental tools to investigate mechanisms of bioinspired propulsion.
- Excellent team player and strong builder of prolific collaborations with cross-functional teams as evidenced by 11 co-authored multidisciplinary scientific publications.
- Self-motivated individual with easy-integration in a multicultural environment with proven ability to work under pressure to high levels of accuracy and quality in a fast-paced work environment.

EDUCATION

University of Virginia, Charlottesville, VA.

Ph.D., Mechanical and Aerospace Engineering.	GPA: 3.92	August 2019
M.S., Mechanical and Aerospace Engineering.	GPA: 3.92	May 2017
B.S., Aerospace Engineering, *highest distinction*.	GPA: 3.85	May 2015

SKILLS

CFD, aerodynamics, physics-based modeling, scientific programming, data-driven analysis, experimental design, flight vehicle dynamics, FEA, CAD, project management, high performance computing, effective communication, strong leadership and collaborative skills.

TOOLBOX

FORTRAN, MATLAB/Simulink, Solidworks, Maya, Adobe Creative Suite, Python, ANSYS.

RELEVANT COURSEWORK

CFD, aerodynamics, flight vehicle dynamics, aircraft design, spacecraft design, thermomechanics, multibody mechanical systems, computation as a research tool, FEA, heat and mass transfer.

RELEVANT EXPERIENCE

University of Virginia, Charlottesville, VA. *Graduate Researcher,* 2015-2019

- Investigated the unsteady aerodynamics, kinematics and bio-physics of nature's fliers and swimmers to inspire unmanned aerial/underwater vehicle (UAV/UUV) design.
- Designed free flight experiments on live organisms and leveraged CAD for 3D motion reconstructions.
- Performed data-driven analysis on bio-data from experiments (as well as canonical studies) with complex moving boundaries and deformable bodies using an in-house immersed boundary CFD flow solver.
- Developed post-processing codes for streamlining workflow from data collection, analysis, to publication.
- Authored 11 publications and 13 professional presentations at conferences and grant evaluation meetings on topics ranging from aerodynamics, hydrodynamics, optimization, to dynamics and stability.
- Mentored and managed 6+ projects by graduate, undergraduate and high-school students.

University of Virginia, Charlottesville VA. *Undergraduate Researcher*, 2013-2015

- Investigated the effect of airframe morphing of flying insects on body dynamics using high-speed cameras and 3D reconstructions.
- Developed codes for kinematics quantification, rigid-body dynamics and single-objective optimization.
- Presented findings in 1 publication and 2 presentations at conferences.

University of Virginia Applied Math and Mechanical Engineering. *Teaching Assistant,* 2017-2018

- Facilitated the learning of over 300 students through office hours and review sessions in Partial Differential Equations (Fall '17), Probability & Statistics (Spring '18), and Fluid Mechanics (Fall '18).

RELEVANT PROJECTS

Optimizing Foil Shape for Fish-like propulsion, 2018-2019
- Designed kinematics generator and shape parameterization methods with validations.
- Elucidated the foil shapes that minimize drag in unsteady motions in different flow regimes using CFD.
- Authored 2 papers and 2 conference presentations in collaboration with Princeton University.

Hydrodynamics and Wake Structure of Subcarangiform Swimming, 2018
- Extracted fundamental fluid physics from a CFD study of a fish fin simplified as a trapezoidal panel.
- Elucidated the dependence of wake breakdown on aspect ratio, irrespective of Strouhal number effects.
- Published 1 paper and 1 conference presentation in collaboration with Syracuse University.

Effect of body configuration and deformation on the dynamic stability of flapping flight, 2016
- Investigated body configuration and deformation effects on the perturbed behavior of an aerial vehicle.
- Derived linearized equations of motion with variable mass distribution with parametric studies.
- Elucicated that body deformations affect flight dynamics through changing center of mass, modifying the instantaneous moment of inertia, introducing inertial force and torque, and altering stability derivatives.
- Demonstated that a deformable body design allows the dynamic response of the vehicle to be adjusted without changing the wing kinematics resulting in 1 publication and 1 professional presentation.

Electric Aircraft Design (Capstone Project), 2014-2015
- Designed a four-place general aviation electric aircraft with distributed propulsion for operation in 2020.
- Conceptualized the body design concept and performed necessary aerodynamic calculations, presenting ideas in a state-of-the-art report and thesis.

Spacecraft Design (Capstone Project), 2014-2015
- Developed mission concepts and grant proposal to estimate the erosion and pollution in the Chesapeake Bay using a low-orbit cube 3U CubeSat, presenting ideas in a thesis.

LEADERSHIP EXPERIENCE

Peer reviewer. 2018-2019
- Reviewed journal articles for AIAA journal (2), and International Journal of Micro-Aerial Vehicles (2).

American Institute of Aeronautics and Astronautics Student Conference, 2017
- Chaired a session of undergraduate student presentations on various topics in aerospace engineering.

Aerospace and Mechanical Engineering, *Team lead*, 2014-2015
- Coordinated groups of 15 students on projects in air-breathing prolusion and aircraft design presenting results to industry representatives from Rolls-Royce.
- Fine-tuned group dynamics, conflict resolution, and delegation skills as a result.

Office of African American Affairs Peer Advisor Program, *Executive committee member*, 2014-2015
- Coordinated a program that offered course-specific help and life skills colloquia to boost the all-round performance of first-year African-American college students.
- Managed 30+ tutors and coordinated contact with colloquia speakers.

HONORS

American Institute of Aeronautics and Astronautics (AIAA), **Abe Zarem award for distinguished achievement in aeronautics,** 2015
University of Virginia Aerospace and Mechanical Engineering, **John E. Scott award for research excellence in fluid-related areas**, 2019
University of Virginia Engineering Research Symposium (UVERS), **First Place**, 2016
American Institute of Aeronautics and Astronautics (AIAA), **Member Spotlight – September 2015,** 2015
AIAA Region I Student conference, **Second Place – Master's Category,** 2015