



## POST-DOCTORAL RESEARCH ASSOCIATES (3)

Computational Turbulence and Visualization Lab (CTV Lab)

The University of Texas at San Antonio, San Antonio, TX

Positions: Post-Doctoral Research Associate (3)

Institution: The University of Texas at San Antonio

Location: San Antonio, TX

Start date: February 2024 or open until filled.

## DESCRIPTION

The [Computational Turbulence and Visualization Lab](#) (CTV Lab) at [The University of Texas at San Antonio](#) (UTSA) has immediate three (3) openings for Post-Doctoral Research Associates.

Two positions (**code: DNS**) are sought in the area of numerical predictions of turbulent high-speed boundary layer problems in supersonic/hypersonic flow regime and complex geometries. The employed numerical approach will be mostly Direct Numerical Simulation (DNS); however, Large-Eddy Simulation (LES) is also available in the in-house flow solver. We are looking for highly motivated candidates with strong HPC skills (MPI Fortran 90/95, C, C++, CUDA Python), turbulent boundary layer theory, Lagrangian Coherent Structures (LCS), and user experience on CPU and GPU supercomputers and clusters. Evidence of productive academic and publication records, excellent verbal and written English skills, the ability to work both independently and as part of a group of researchers with diverse academic backgrounds are mandatory. Current and funded projects in the research group involve wall-curvature effects on high-speed flows, boundary layer detachment due to streamwise and streamline pressure gradient and high-speed crossflow jets.

The third position (**code: Scientific Visualization**) involves research in virtual/augmented reality with applications to computational fluid dynamics. Candidates should possess knowledge and experience on mixed reality tools (HTC Vive, Varjo XR-3, Oculus Rift, Microsoft HoloLens, etc.) as well as programming via Unity Game engine (required), Python, C++ and C#.

## QUALIFICATIONS

Required qualifications: applicants must have a Ph.D. in Aerospace, Mechanical Engineering, Computer Science or a related field, to be awarded prior to starting the position. The candidates should have a strong background in the following areas: finite element/volume analysis, turbulence statistics, coherent structures, scientific visualization, and programming. Furthermore, oral communication and written skills are essential as part of the dissemination purposes (publication and oral presentations).

Responsibilities for the position include computational fluid dynamics analysis and postprocessing activities, manuscript writing for publications in scientific journals and for grant proposals, oral presentations during group meetings. Additionally, there may be lab management responsibilities, including supervision of undergraduate and/or graduate students. All positions require attendance at conferences, portfolios, and seminars. It is expected that the post-doctoral researcher will collaborate effectively with colleagues in the high-speed flow and scientific visualization community.

Position duration: The initial appointment will be for 1 year with the possibility of being re-appointed for additional years based on satisfactory performance and availability of funding.

Salary and fringe benefits: it is negotiable depending on prior years of post-doctoral experience. The University of Texas at San Antonio (UTSA) offers an excellent benefits package for its employees. For more information on the available benefits for full-time employees, please review the [Employee Benefits at UTSA](#).

## MISCELLANEOUS

UTSA is one of the 13 University of Texas System's campuses and is located in the City of San Antonio. The [Department of Mechanical Engineering](#) and [The Klesse College of Engineering and Integrated Design](#) (CEID) have experienced sustained growth in student population, number of faculty, and research awards. The College includes five departments/schools: School of Civil and Environmental Engineering and Construction Management, Department of Mechanical Engineering, Department of Biomedical Engineering and Chemical Engineering, Department of Electrical and Computer Engineering, and School of Architecture and Planning. Several research centers are also hosted within CEID, including the Texas Sustainable Energy Research Institute, Center for Advanced Manufacturing and Lean Systems, Center for Excellence in Engineering Education, Open Cloud Institute, and Institute for Regenerative Medicine. The University enjoys strong ties with other research institutions and companies located in San Antonio. These include Southwest Research Institute, CPS Energy, Texas Biomedical Research Institute, Joint Base San Antonio, San Antonio Military Medical Center, and UT Health San Antonio.

[San Antonio](#) is the second largest city in the great state of Texas and the seventh largest city in the United States. It is the destination of 7 million visitors each year. A recent survey ranked San Antonio eighth among America's top 10 destination cities. In San Antonio, the health care industry is a \$7 billion enterprise employing more than 100,000 people. It is one of the city's three largest employers, along with the military, tourism, education and recreation. With over 300 days of sunshine annually, San Antonio and surrounding areas offer an abundance of outdoor sports and recreation. Numerous rivers in the [Texas Hill Country](#) north of San Antonio provide opportunities for canoeing, tubing and white-water rafting. Area lakes attract fishermen, as well as water skiing, jet skiing, and sailing enthusiasts. The Gulf coast is only 100 miles away. Working ranches throughout Central and South Texas are available as hunting leases for wild game, while dude ranches offer a taste of the Old West, complete with horseback riding. Numerous state parks offer opportunities for hiking in the rugged terrain of the Hill Country.

## HOW TO APPLY:

To apply for this position, please ATTACH (i) a 1-page cover letter stating your research interests and career goals, (ii) a detailed CV, and (iii) contact information for three references and email to Prof. Guillermo Araya at [juan.araya@utsa.edu](mailto:juan.araya@utsa.edu) quoting the position code (e.g., "DNS Post-doc position") in the email subject. Applicants who are selected for interviews must show proof that they will be eligible and qualified to work in the United States by the time of hire. U.S. citizenship or permanent residency preferred, but not required. Incomplete applications will not be reviewed. UTSA is an Affirmative Action/Equal Opportunity employer. Women, minorities, veterans, and individuals with disabilities are encouraged to apply. For further information, please visit the [Computational Turbulence and Visualization Lab](#) or contact Prof. Araya at [juan.araya@utsa.edu](mailto:juan.araya@utsa.edu)