

# ANDI ZHOU

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Dear Hiring Manager at ANSYS,

I am writing to express my sincere interest in the R&D Verification Engineer position within ANSYS's Fluid Business Unit. As a long time loyal user of ANSYS Fluent, both in academic and industrial settings, it would be an absolute dream come true for me to work for a company that stays at the absolute frontier of fluid dynamic modeling and development!

My academic and industry journey has been marked by application of simulation and verification methodologies in fluid dynamics, particularly within the automotive sector at renowned firms such as Zoex and Volvo. I am convinced that the rigorous, fast-paced, testing acumen I developed throughout my internship, research projects and design teams will serve as a valuable asset in fluid model development and verification.

At Zoex, I led and completed a powertrain coolant system test stand that sought to validate the 1D simulation previously conducted by our team. My design recommendations, based on experimental data collected from my test plans, increased the system flow rate by 7.5%. My manager highlighted my fast-paced work ethic and emphasized that I produced more data in 9 weeks than the project had in the previous 2 years.

Further enriching my experience in CFD software are my internships at Volvo Truck North America, where I designed a swirl air-coolant separation tank using Star CCM+ Eulerian-Eulerian multiphase flow, achieving a 99% air separation efficiency and reducing its mass by 40% compared to the original design given.

To further my expertise in simulation, I conducted research into Entropy-Stable CFD Algorithm during my independent study, where I explored into the foundational mathematical formulation behind the most popular numerical fluxes (Lax-Friedrichs, Enquist-Osher, and Roe) employed today.

In addition, I implemented my own CFD solver for the inviscid Navier-Stokes equation. I firmly believe that as a fluid engineer specializing in simulation and verification, it is crucial to peek into the black box of contemporary CFD software. In this project, I've implemented both the first and second-order finite volume methods, in addition to adaptive meshing techniques for efficient computation.

As a graduating engineer with an unrelenting passion for fluid dynamics, the prospect of contributing to a company that is synonymous with cutting-edge fluid dynamics development is incredibly inspiring. I have attached my engineering portfolio and research report to my application, which highlights all the above projects that I have discussed. Thank you so much for your consideration!

Sincerely,

Andi Zhou