

ANDI ZHOU

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Dear Hiring Manager at Hanon Systems,

I am writing to express my sincere interest in the CFD Specialist position within Hanon Systems. Having utilized various CFD tools in both academic research and industry projects, I am thrilled at the prospect of joining a global engineering team known for its cutting-edge advancements in fluid dynamics and thermal management within the automotive industry!

My academic and industry journey has been marked by rigorous application of simulation and verification methodologies in fluid dynamics, particularly within the automotive sector at renowned firms such as Zoox 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 within the CFD team at Hanon!

At Zoox, 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 an air-coolant centrifugal separation tank using Star CCM+ multiphase flow, achieving a 99% air separation efficiency and also reducing its mass by 40%.

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 by commercial CFD packages 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 prospective engineer with an unrelenting passion for CFD, I am confident in my ability to succeed as a CFD engineer at Hanon! 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