

Brandon J. Dillon
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OBJECTIVE

Obtain employment in a hands-on engineering environment related to flight or space systems development and testing

EDUCATION

Virginia Polytechnic Institute and State University (VPI) – Blacksburg, VA

Master of Science in Mechanical Engineering

GPA: 3.42 – Concentration in Fluid Mechanics and Turbulence (Summer 2010)

Bachelor of Science in Mechanical Engineering

GPA: 3.45 – Concentration in Acoustics

Minor in Economics

GPA: 3.72 – Concentration in Game Theory

EMPLOYMENT

Flight Instructor

Blacksburg Airport (KBCB) – Blacksburg, VA November 2008 – December 2009

Provided flight instruction for private pilots and unmanned aerial system (UAS) operators.

Focused on basic aerodynamics, pilotage, dead reckoning, airmanship and a deep understanding of weather.

Acoustic Engineer

Crutchfield, Inc. – Charlottesville, VA April 2006 – May 2008

Worked on a team in the production of Crutchfield's "Virtual Audio Showroom"

(US Patent 7,096,169). I designed, built, and operated experiments in anechoic

environments to measure a wide variety of home and automobile loudspeakers. This

information was used to create digital filters for a real-time convolution engine. Using

advanced digital signal processing (DSP) techniques, I also wrote code to optimize and add functionality to this convolution engine (2,200 lines GNU C).

Graduate Research Assistant

Virginia Tech – Blacksburg, VA August 2006 – Present

Worked as part of a research group in the Kelso Baker Hydraulics Lab to determine a model

of interaction between large-scale hydrodynamic turbulent events and the entrainment of

sediment in waterways. Experimentation was conducted in a 68-foot flume equipped with a

3-component laser Doppler Velocimeter (LDV). Terascale computational fluid dynamic

(CFD) simulations of fluid-sediment interaction were modeled using the open-source CFD

code OpenFOAM. Currently planning a publication detailing comprehensive resolution

requirements for DNS and LES simulations in boundary layers.

Undergraduate Research Assistant

Virginia Tech – Blacksburg, VA

Acoustic Phased Array May 2005 – April 2006

Worked independently to develop a 128 channel, 200kS/sec, 16 bit, portable data collection

system for use with a 2m acoustic phased array. Developed 9,800 lines of C# that controlled

DAQ system registries, high-speed DMA transfers, GUI post-processing and data

conversion. Signal conditioning hardware was designed with digitally assignable gain and

anti-aliasing cut-off frequency. Phased array was used to characterize aero-acoustic noise from a Boeing 777 landing strut and suggest changes to its design to meet new European noise requirements.

Biomass Fuel Project May 2005 – October 2006

Worked on a team to characterize chicken litter as a potential biomass fuel for use in large scale power producing furnaces. The analysis focused on soft metal deposits (slag) of the fuel using inductively coupled plasma elemental analysis (ICPE), a scanning electron microscope with energy-dispersive x-ray spectroscopy (EDS) capability, and visual microscopy. This investigation resulted in a new, low-cost method of characterizing the viability of biomass fuels for use in furnaces. See publication below.

EXPERIENCE

Flight

655 hours total time in 19 types of aircraft
Flight Instructor – Airplane Single Engine, Glider
Commercial Pilot – Airplane Single Engine Land & Sea, Glider, Instrument Airplane
Ground Instructor – Advanced, Instrument
2nd Class Medical Certificate (UAV Pilot-in-Command Ready)
FAA High Altitude Physiological Training

Professional Engineering

EIT accredited in Virginia
2.9 / 4.0 years of qualifying experience towards the Professional Engineer exam

Computational Skills

Programming Languages: C#, GNU C, C++, and Matlab
CFD programs: OpenFOAM, Fluent, and CFX
CAD programs: UGS NX 4, 5 and 6, Paraview, and OpenCascade
Virginia Tech Short Course on OpenMPI (parallel programming)

Mechanical

US Department of Labor Journeyman Machinist (in progress)
MIG and TIG Welding (Mild Steel, Stainless Steel, and Aluminum) Proficient
Moonlight occasionally as a machinist and construction worker (framing and electrical)

Volunteer Activities

CARITAS Shelter – Richmond, VA June 2003 – August 2004
CARITAS is a co-op of Richmond churches that supports the homeless. My primary duties involved coordinating shelter and delivering operational supplies (cots, linens, etc.). I acted as the delivery supervisor and liaised between CARITAS, the various churches, shelters and linen cleaning services. I managed five part-time employees and occasionally drove a 20-foot box truck.

General District Court – York County, VA – May 2001 – August 2001

I assisted the clerk staff with customer service, paperwork, and errands and created the court's webpage which included a primer on courtroom etiquette.

PUBLICATION

Dillon. B. J., Kim S-S., Agblevor, F. A. 2006 "Slagging Properties of Poultry Litter Ash During Combustion" In: *The Deans' Forum on Energy Security and Sustainability*. 06 October 2006. Virginia Tech, Blacksburg, VA

Exceptional references available upon request