

# Walker M. Demel

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## EDUCATION:

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<b>Northwestern University</b> , Evanston, IL PhD Computer Science – AI/ML Qualitative Reasoning Group	<b>2021 – 2026 (Expected)</b>
<b>Butler University</b> , Indianapolis, IN B.S. Computer Science B.S. Mathematics B.A. Music GPA: 3.953 Honors College Member	<b>2017 – 2021</b>

## ACADEMIC AWARDS:

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Butler Academic Scholarship Award	<b>2017-2020</b>
Upsilon Pi Epsilon (International Computer Science Honor Society) Academic Achievement Award	<b>2020</b>
Duckwall Talent Award	<b>2017-2020</b>
Mildred Allen Piano Award (Two-Time Recipient)	<b>2019, 2020</b>
Class of 2021 Outstanding Butler Student Nominee (Pending award announcements)	
Dean's List: Fall 2017, Spring 2018, Fall 2018, Spring 2020, Fall 2020	

## RESEARCH EXPERIENCE:

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<b>NASA Student Airborne Research Program</b> , Armstrong Flight Research Center, CA	<b>Summer 2020</b>
<ul style="list-style-type: none"><li>Self-led, mentor guided research project – “Measuring Temperature of Urban Rooftops as it Relates to Fractional Coverage of Solar Panels”</li><li>Successfully mapped fractional coverage of solar panels using hyperspectral AVIRIS-NG and thermal MODIS-ASTER remote imaging over Santa Barbara</li><li>Discovered and presented preliminary evidence suggesting that since solar panels convert some of their absorbed solar energy to electricity, proportionately less is released as heat</li><li>Presented research talk to SARP students, alumni, and NASA scientists at conclusion of program</li><li>Co-author on two publications submitted to American Geophysical Union (AGU) Fall Meeting 2020</li></ul>	
<b>Butler University Mathematics Research Conference</b> – Butler University	<b>Summer 2019</b>
<ul style="list-style-type: none"><li>Worked to create and implement a new algorithm for finding Greatest Common Divisors</li><li>The algorithm itself builds upon Stein's Binary GCD Algorithm by better estimating large numbers using powers of 2 and 3 in the hopes of faster convergence to a base case</li><li>Presented a talk on this project in August 2019</li></ul>	
<b>Butler University Music Theory Conference</b> – Butler University	<b>Fall 2018</b>
<ul style="list-style-type: none"><li>Wrote about “Motivic Development in Rachmaninoff's Piano Prelude Op. 23, no. 5”</li><li>Presented a talk on this research in December 2018</li></ul>	

## COLLEGE LEADERSHIP EXPERIENCE :

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**Member of Student Conduct Board**, Butler University Student Affairs **Fall 2017-Spring 2021**

- Sat on board to approve or deny appeals for student conduct across the university
- Was involved in an overhaul of the student conduct appeals process in 2019

**President**, Upsilon Pi Epsilon, Butler Chapter **Fall 2020-Spring 2021**

- Served as coordinator for Butler's Computing Sciences Honor Society
- Coordinated study nights, game nights, and new member inductions

**Vice President**, Butler University Chorale **Fall 2020-Spring 2021**

- Worked with the administration board to plan community events during a semi-virtual semester
- Facilitated communication between members of the choir and leadership

**Vice President**, Piano Club of Butler **Fall 2019-Spring 2021**

- Helped coordinate visiting professors and performers to give masterclasses and concerts at Butler University

**Secretary**, Music Teachers National Association, Butler Chapter **Fall 2019-Spring 2020**

- Helped plan group meetings and attended an enrichment conference in Indianapolis in September 2019

**President**, Out of the Dawg House A Cappella **Fall 2018-Spring 2020**

- Coordinated and executed rehearsals (3 weekly), gigs, and semi-annual concerts
- Lead rehearsals and teaching voice parts through accompaniment on piano

**Treasurer**, Out of the Dawg House A Cappella **Spring 2018**

- Managed the budget of the organization
- Oversaw contracts with off-campus organizations that hired our group to provide entertainment

## TEACHING EXPERIENCE :

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**Teaching Assistant**, Parallel Programming, Butler University **Spring 2021**

- Future Teaching assistant of 2 sections of Butler's capstone computer science course

**Music Instructor**, Butler Community Arts School, Streamwood Park District, Privately **March 2015-Present**

- Giving private piano lessons to 10-15 elementary school children per semester, creating lesson plans and curriculum for each student.

**Mathematics Tutor**, Butler University, Privately **Fall 2020-Present**

- General mathematics tutoring for undergraduate students in College Algebra, Precalculus, Calculus, Linear Algebra, and Differential Equations

**Computer Science Tutor**, Privately **Fall 2020-Present**

- Tutoring local high-school students in Advanced Placement Computer Science classes

## ADDITIONAL SKILLS :

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- **Coding Languages:** Java, Python, C++, C#, HTML, SQL, CSS, JavaScript, R, MATLAB
- **Computer Programs:** Word, Excel, Powerpoint, ENVI, ArcGIS, Wolfram Mathematica
- **Music:** Accompanying, performing, teaching piano, teaching and leading choirs

## **AFFILIATIONS:**

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American Geophysical Union  
Music Teachers National Association  
Butler University Honors College  
Upsilon Pi Epsilon – International Computer Science Honors Society  
Kappa Mu Epsilon – Undergraduate Mathematics Honor Society  
Out of the Dawg House A Cappella  
Piano Club of Butler  
Butler Rocket Club  
Butler University Contemporary and Commercial Music Club

## **PUBLICATIONS:**

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Jarnot, A. et al. [**Demel, W.** 30th of 53 authors] 2020 "A Comparison of Trace Gas Trends in Urban Areas Collected via Whole Air Sampling during the COVID-19 Pandemic" American Geophysical Union Fall Meeting, Abstract # A095-0001

Yang, M.M. et al. [**Demel, W.** 35th of 53 authors], 2020 "NASA Student Airborne Research Program (SARP) Whole Air Sampling across the United States during the COVID-19 Pandemic" American Geophysical Union Fall Meeting, Abstract # A025-07