DISSERTATION BENJAMIN WILD SAFEGUARDING THE EPHEMERAL – PHOTOGRAMMETRY FOR GRAFFITI DOCUMENTATION

Examiners

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Abstract

Graffiti are full of contrasts, highly visible in urban spaces, yet highly ephemeral. Hated by many, tolerated by some, and loved by others, they often provoke strong reactions. Despite their prominence in public discourse, graffiti have received limited academic attention, which is surprising given their rich and diverse content. Increasingly, scholars view contemporary graffiti as cultural heritage, relevant to fields like linguistics, anthropology, criminology, and history. However, reliable data for analysis remains scarce, and existing documentation often lacks consistency or objectivity.

This dissertation develops a photogrammetry-based framework to create a solid data foundation. It focuses on Vienna's Donaukanal, one of the world's longest contiguous graffiti zones (approx. 13 km). Identifying new graffiti is difficult due to rapid changes and vast areas. To address this, an automated, image-based change detection method was developed, using incremental bundle adjustment and synthetic cameras. Validated on 6902 image pairs, it achieved 87% accuracy and 77% recall, reliably detecting new graffiti while ignoring irrelevant changes such as shadows casted on the walls.

Beyond detection of new graffiti, preserving graffiti's spatial and temporal context is crucial. Photographs alone are insufficient, so this study uses orthophotos for distortion-free, georeferenced documentation. A workflow was implemented in the software AUTOGRAF (AUTomated Orthorectification of GRAFfiti photos) to efficiently convert images into orthophotos. In a test with 826 photos covering 100 graffiti, AUTOGRAF processed 95% successfully, enabling a 3D web platform to display graffiti in its original, virtual context.

Additionally, to these methodological developments, a case study documents migrants' graffiti in abandoned buildings on Turkey's west coast, a key point on the route to Greece. These transient graffiti, made with tools like chalk or lipstick, are important testimonies of lived experiences. Harsh conditions made documentation challenging, underscoring the urgency of preserving them through orthophotos and 3D models. These contribute to a deeper understanding of migration and provide valuable primary evidence.

Together, the studies highlight the diversity of graffiti and the potential of photogrammetry to preserve this ephemeral, participatory form of human and cultural expression. This work offers tools and insights for both researchers and enthusiasts.