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Project Matrix: a Virtual Experience Platform for RE-Conciling Human Ecology & Urban Ecology

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ABSTRACT: A flashback to previous centuries testifies extraordinary human-lead technological prowess; from the invention of the telescope in the 17th-century, the telephone in 19th-century, the Worldwide-Web and technological revolution of 20th-21st century; it is undeniable that Humans constantly strive to overcome challenges through technological innovation by empowering/advancing humanity. Yet, we've witnessed a global disruption by a pandemic that exposed unforeseen weaknesses and exacerbated existing issues (human negligence or not). Suddenly all well-structured and reliable system-organization failed, exposing inadequacies, causing chaos and harmful damages of interconnected components including *the flows of people, health, matters, information, economy, politic, materials, communication networks, deadlines, etc.* Covid-19 spread across the globe defeated technological advancements. How could that happen in such technological era? Is Human in control of digital evolution or is the technology we invent holding us on leash? Was technology in place to leverage and tackle risks? Where we not prepared to it, or were we focused on the wrong tracks? In any case, whether by failure or negligence, Covid-19 has made history and will continue generating ink flow for decades to come. It is to help address these multi layered-multidimensional and highly complex socio-technical and temporal systems that this project intends to develop a series of applications in alignment with the SDGs. The focus is to blend the capabilities of environment scanning Apps with that of the human habitus-emotions capture, tracing and feedback collector in time and place. It requires advance analytical studies to fully understand interdependencies while respecting the relationships of all subsystems.

KEYWORDS: Geo-Information, Urban-ecology, Human-Ecology, Geospatial AI enabled Apps., Human centered Design, Therapeutic Ecology.

INTRODUCTION

At a time when we found ourselves more exposed to systems shutdown (Covid-19), when more data is collected than we know what to do with, and when more applications on smart Phone can scan our environment with accuracy like never before *(3DSizeME, 3D-Creator, Canvas, 3D Scan-Anything etc…)*, it seems essential to implement an individual's efficient data collection capacity that strategically fuses scientifically-rooted studies and patterns via artificial intelligence-*(AI)* with geolocation to provide an intersecting node that connects; academia *(research-testing Lab-pilot projects)*, industry *(startups- entrepreneurship)* and City governments *(Geo-community - Geo-Health).* This project explores systemic model-builder approach through users' engagement and participation into the development of cross-collaborative platform that intends to celebrate individual differences of users and maximize their contribution to the cloud-*based Geo-Info-HUB*[1] that will house the collective effort. This work creates research possibilities for user-centered-design and urban analytics with enhanced integration of Geoscience applications, machine-learning and automated sensors in the making of highly efficient urban and building systems. To start, we use ArcGIS *Quick-Capture-App*[2] (originally developed for *field capture*), for its flexibility and interoperability with other Apps such as ArcGIS Survey 1,2,3[3]. Students in *Human Centered Design* class customize *Quick-Capture-*

[1] Use here as a cloud-Based HUB that contains information's from users of various geographical locations that act as an *information Goods* of human psychogeography experiences and interior uses of the space across the selected research sites.

[2] ArcGIS QuickCapture is a field data capture app that allows you to capture data quickly. You can capture both the location and attributes of assets or incidents as you travel. *A project author determines the arrangement of buttons, how they appear, and the information they collect.*

[3] ArcGIS Survey123 is a simple and intuitive form-centric data gathering solution. Create, share and analyze surveys in just three easy steps.

app to focus on issues at hand in their area-of-interest. Other applications such as ***Shmapped***[4] have been developed for measuring user emotions, but the studies are limited to the emotions around green spaces and parks and does not provide open access or multi location capture, it therefore limits the analysis to one specific and restricted area and can hardly help in the large-scale decision-making. Additionally, despite the improvement of online questionnaire used today, there are still issues related to accurate location during the event and users' delayed feedback, which constitute the essential components of the data collected; because in most cases, users' responses are tied to specific time and place. Having advanced tools for urban analytics is not enough, especially when most tools are focused on environment scanning and tracking users' activities without user direct feedback or opinion on the ***WHYs***. To bridge the gaps, our work supports urban analytics and user emotive responses on-site, with no interference or filter by a third-party company. This reinforces the core idea of this work in developing ways to value the individuals as a key-player who contributes by making personal decision on what feedback to share of their experience. This represents an added value for user's voice to be heard, at the same time, it asks important/intimate questions; *What data or information about my mind-body-health can/should be shared with others? What rights and responsibilities do I have when it comes to changing the essence of what I have enjoyed as freedom of our individual privacy? What code are we creating for the future generation? And how does that translate to a generation that lives a different experience?* This work also explores the question of; *How to use existing networks to support a low-tech data infrastructure building created by users?* Our development will extend these capabilities by synchronizing existing data with the user's spatiotemporal data inputs. Because Urban-Science and Citizen-Science need to go well beyond advanced analytics of objective/subjective data that are not always used where they help the most, since most values of cities are rooted within the data their users generate in correlation with the built environment.

Another focus of this research is on the Systemic design through two major components: Urban Ecology *(infrastructure-energy-atmospheric)* and Human Ecology *(emotive-mobility-experiential-temporality-communication, etc….)*; it explores the values that emerge from interlocking homogenous and heterogenous data. To successfully implement such fusion, new methods should be Re-imagined where objectives heterogeneous data *(location intelligence, traces, and patterns of human habitus)*, coalesce with subjective *data (emotional, biased, individual, internal, instinctive, intuitive, impressionistic)* in ways that maximize and optimize unexpected new dynamics emerging from the processes. The question therefore becomes; *How do we engineer and implement a platform that permits a smooth yet engaging participation of the users to the process of building together an environment that empowers, celebrates groups and individual uniqueness as essential part of the puzzle that makes up a viable city?*

1. Research project development

This research has its focus around Social-Science and Human-Ecology and its inherent connections to Urban-Ecology. This model is developed and tested in the school of Human-Ecology at Georgia Southern University[5] and envisions many interdisciplinary collaborations. The effectiveness of this model will depend partly on the Geo-Information HUB set up and the student's ability to collaborate, apply research into the App-building, and, on the quality of data obtained by personal device *(App., cameras, and sensors)*. The project is set up as a participatory project where 74 students research and analyze an area of choice. Activities include analyzing CENSUS data, ESRI[6]'s community analyst, demographics, survey, and environment data to make diagnostics tests on the urgency, which then guides the diagnosis and development of a suitable *App* for addressing the human-centered-Design challenges of the location. The project anticipates that the tools will perform the best with the latest and more up to date devices which, then raises another challenge of inequity. Nevertheless, this work intends to use artificial intelligence technology to improve the design process by appending this layer of user information to augment the design process toward a more participatory and therapeutic design solution for all.

The result promises to create a user-centered experience model that can inform on new urban morphologies based on the reactions of individuals or groups to the existing. This research is part of a transdisciplinary framework engaging five schools "*Human Ecology, Computer Science, Fashion-Merchandizing, Human-Development and Family-Science, and recreation and tourism,*" at Georgia Southern University. Another development will focus amongst other things on *1. _ therapeutic approach to place and space planning for healthier and augmented social life, 2. _ participatory mapping and quantifying non-tangible and ephemeral events of complex urban ecosystem, 3. _ advancing transdisciplinary academia research based on Scientifically rooted diagnostics for therapeutic design solutions that heals the environment which in turn augments its user's performance, wellbeing, and wellness toward a superior enjoyment of life.*

[4] *Shmapped is an app that allows you to map your city and* measures your experience of city living.
[5] Georgia Southern University is a public research university in the U.S. state of Georgia. The flagship campus is in Statesboro, and other locations include the Armstrong Campus in Savannah and the Liberty Campus in Hinesville.
[6] ESRI: Environmental Systems Research Institute

2. Origins and Motivations

The difficult awakening from a pandemic that disrupted all known functions of a world we thought we understood and forced us to acknowledge the underlying and essential interconnectivities of our global ecosystems down to the city and individual level. The spread of the virus reminded us of the law of nature residing in the core interdependencies between systems; that cities and people cannot be siloed in their treatments because human habitus and life is blended with its environment in ways that cannot be extracted but analyzed in context. Our project then proposes to leverage existing geoscience tools with Artificial-Intelligence to allow social-emotional capture built-in with scanning Apps that could in the long run, trace, and collect emotions, thoughts, heartbeats, blood flow etc. with geolocation and temporal attributes to help bring into the environment and building design, yet another layer of anonymous users' information. This development proposes then to leverage geoscience tools with Artificial Intelligence to allow social-emotional capture built-in with scanning Apps that trace, collect emotions/ thoughts, to bring into design another layer of information that opens new venues into research-based design in academia to broaden and deepen knowledge in citizen science for more accuracy and understanding of the decisions made during the "*corps-à-corps"* with the built environment (urban-natural-personal space). Because "*… There is no logic that can be superimposed on the city; people make it, and it is to them, not buildings, that we must fit our plans*[7]".

3. State of the question

If it is true that the AEC[8], Design and urban planning remain essential fields in the future job market, it is also true that these fields have now reached a pick and in urgent need of a paradigm shift, to be able to measure with an increasingly complex urban and social systems. The need to integrate emerging tools in the areas of intelligence, Geoscience and geomatic cannot be overemphasized, as we witness our cities evolving through complex stages of transformations *(spatial, physical, social, geographical, and environmental)*, which directly affect the user's experience and the quality of life in urban space. We can't hope that existing technology developed out of context will adjust and tackle current issues such as the spike in urban population growth; a change which will generate enormous challenges in terms of the city's ability to sustain its core and vital infrastructure networks, while accommodating this overwhelming flow of population, with intense circulation of citizens, in need of housing, work, entertainment etc.…. This high demand cannot be satisfied with the existing urban industries and infrastructures for the simple reason that this new urban population will form new social diversities, new inequalities from which emerge new forms of discriminations with spatial differentiations hitherto unknown. Hence, the importance of using Geoscience and intelligence to help bring the users at the table to participate to decision making of an environment designed for them.

If it is premature to answer these questions at the start of this proposal, it is however necessary to declare that the development of this work will attempt to elucidate on the uncertainties using geospatial application intersecting with *CAD-BIM-GEO* on an education platform that fosters community participation through student-leaders acting as a catalyst for reconnecting the community served. The Geospatial applications integration to design application *[GeoBIM]* tends to re-engineering design education around Earth Science and Human ecology as they relate to the health and wellbeing of its essential players (Humans). This work takes the position that *"if Humans invent technology, then technology must serve humanity"*. It is in those terms that we frame this work around advanced scanning *Apps* with emphasis on user's real-time collection of objective and subjective data in the built and natural environments where the user can capture data, gather information, push into the cloud for analysis. The informed solutions promise an innovative blend of existing and new software architecture, based on user-server communications to leverage environment and analytics data with those of the users collected via handheld devices (tablets, smart phones etc..), all which will contribute to the development of a more inclusive *Smart City by Smarter citizens*. This transdisciplinary focused research extends to; _understanding the effect of urban and personal space on user's wellness or deterioration of wellbeing, _ quantifying non-tangibles and spatiotemporal reactions to the urban ecosystem, and _ using results as add-on set of needed and sensible information of the lived experience (low-tech) to help inform decision making. The framework mimics a ***Metaverse-Play*** concept that involves users in the game of Out-innovating the alternative city-place-space that does not yet exist or cannot yet be generated by current technology blends. Jane Jacobs[9] sums it up in this quote: *"Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody"*.

3.1 Rationale for the proposed strategy

With the emergence of Augmented Reality *[AR]*, Mixed Reality *[MR]*, Virtual Reality *[VR]*, digital twin transformation and the Internet of Things *[IoT]*, we can now collect a vast amount of data, to develop strategies in systemic approach that help improve citizens interaction and human well-being in the environments. We are witnessing a technological revolution that transpires all the way down to the

[7] Jane Jacobs on "*People-Centered Urban Planning*".
[8] AEC: Architecture, Engineering and Construction.
[9] Jane Jacobs is a Canadian American author, human rights activist, and philosopher of architecture and town planning. His theories significantly modified North American town planning.

individual user; most handheld devices are now grounded to a true geospatial network that facilitates the feasibility of crowdsourcing with the ability to quickly generate credible virtual models that allow to meet the growing needs in terms of resilient urban system. The use of *QuickCapture* App in this proposal will help create a wealth of *Information-Goods(IG),* for the free market economy of knowledge and approaches. Research in the urban domain and human ecology reveal the importance and need for accentuated global studies in the behavioral and social aspect of the city and building dweller as well as the spatiotemporal interaction in the city, which is an important aspect of human health, but one which is often taken lightly in analytical space and place making.

This work approaches the built environments as socio-technical systems with various sub-systems: physical (with form), and nonphysical/dynamic (*emotional-intellectual),* augmented with spatial technology on Crossfield-platforms that integrate Geoscience and GIS[10] as the X-Ray for informed-holistic sustainable Design solutions. With the increasing demanding lifestyle in an associated increasingly complex physical environment that is more and more densified, there is need for new data-collection-sets and methods that are trans-applications and interoperable to deal with, Complexity in DATA collection and processing. This complexity is due to the heterogeneity of objective/subjective data, including organized and loose data; not to mention the data variability, which makes the interpretation of similar data values very sensitive to the context and time in which it is collected. Additionally, there is the issue of data uncertainty and bias, because of the subjective nature of the data. *Objective and subjective DATA* are often in conflict; however, their interdependency and conflicting nature is essential to this work as their spatialization engages into a *push-pull* effect that allows the emergence of unexpected and somewhat organized chaos resulting in out innovating.

3.2 Metaverse-Play; a participatory approach of scenario-builders (building blocks) for alternative and Re-imagined experience emerging from playing with urban Dynamics and Tensions.

In the present momentum, most reliable Data capture and solutions are controlled by few large organizations or private companies and most require license to access Data that are already filtered, this takes away individual freedoms or any ontology in general. It is why this proposal is concerned with Re-registering the user (1) in a non-controlled and organic symbiosis with the natural environment, where the high-tech permits to design a hybrid platform that stitches back together "*similarities*" and "*opposites*" with no disruption to the humans' natural way of life, but rather supporting-exploiting low-tech dynamics to augment the high-tech; and (2) in an emotion state that happens at a social-collective-individual level, and call out the essence of humanity, moral, social responsibility of Human beings among themselves and the care and concern for the environment to help care for one another.

3.3 Scan2GeoSpatialBIM/CAD process and user engagement The process of a 3D global replica of the built environment has been made ubiquitous with the support of depth sensors released on iOS and android devices since 2017. We have now seen LiDAR chips in smart phones by integrating SLAM[11] Algorithms into devices with depth sensors to obtain a highly accurate scan of indoor and outdoor environments feasible by individual user. This proposal mirrors the process developed for extracting 3D Building Information and Node Network from Scan results in data and schema like those released for *IndoorGML*, where the user's Smart Phone is provided with a true light-weight 3D map and network graph of their environment of interest, this sets ground for the use of ESRI'[12]s *QuickCapture app* in this work, for its interoperability capabilities to pull in information from various other sources and Applications such as ESRI Survey 1,2,3, with a user input that allows to track experience in time. The 3D Map and Data scan is a built-in infrastructure to be appended to users' emotive experience developed in this work.

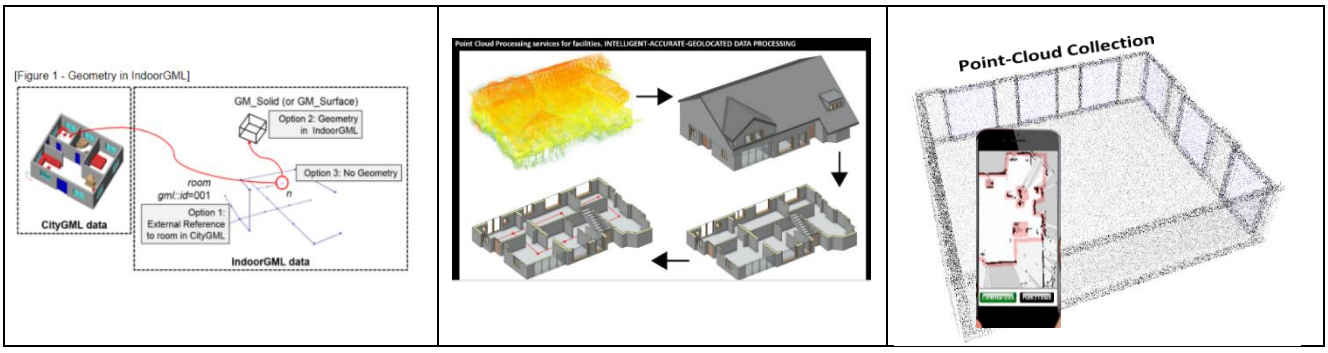

Figure 1: (Left) Existing Geometry in Indoor GML appended with the traces and human experience (blue line). (Center) Light-weight 3D extraction map and tracing graph *(red lines)* of user's experience in environment. (Right), Point-cloud Collection by user's smart phone. *Images courtesy of Geoff Taylor Denzel Zang. 2017.*

[10] Geographical Information System
[11] SLAM: *Simultaneous Localization and Mapping*
[12] *ESRI: Environment Systems Research Institute, represent 43% of the global market in GIS.*

4. ESRI's Quick-CAPTURE-App

Quick-Capture-app is used in this work to develop new use cases pertaining to building urban geo-emotional data infrastructure and to develop systems that can identify users' patterns through capturing and remembering spatiotemporal interactions, and re-use computed data to carry out predictions, and ultimately educate on performing informed actions with speed and accuracy. This yields opportunities in research toward a *therapeutic* urban design approach focused on real diagnostic on human ecumene[13], the socio-cultural and environmental interrelatedness that fits into a transdisciplinary framework with focus into the *_dynamics of urban social life_ understanding of live experience; _ how city can be repurposed to satisfy evolving needs.* How do we develop a model that that is user-led, location-culture-individual and time specific? In contrast with the off-site static paper-survey questionnaires, this proposal focusses on an *On-site live survey*. Because after-the-fact *static questionnaires* lack vital components such as location-time, and struggle to process and deploy a massive amount of data.

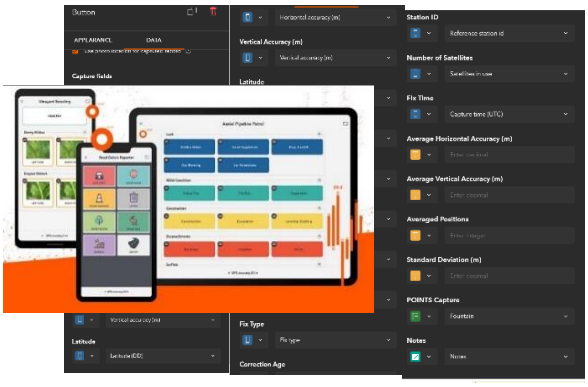

Figure 2: *(in black)* ArcGIS *Quick-Capture-app* Attributes showing available inputs and user feedback mechanism including and not limited to (time, speed, duration, direction, altitude, latitude, user's notes, and selection of options etc.…). *(Forward)* Quick-Capture-app user interface for; *(Left)* vineyard data collection. *(Center low)* Road Debris collection and (*Right)* Arial Pipeline patrol.

4.1 Project stages (including methodology)

The concept: The development of the App includes a variety of category that we do not know yet, it is made to readjust by location-users, and interest. The figure below presents the draft of different capture categories that can be crossed. This user participation multi-layered effort will lead to various content collections that have never been crushed together yet. It then will open new venues for advanced urban analytics research that will deepen knowledge in *(1) Spatial Definers of Human Performance, (2) Spatial Cognition in mental and graphical representation of space utilization, (3) Spatialized temporality; and (4) Tackle the tensions that emerge* from the opportunistic meeting between *low-tech* and *High-tech*, *efficiency and amateurish*, *precision and imperfection, digital and tactile*. Can these studies help fuse cultural-religious or geographical contradictions toward a positive outcome that transform rejection or tension of societal "nonconformity" to an area of study and growth?

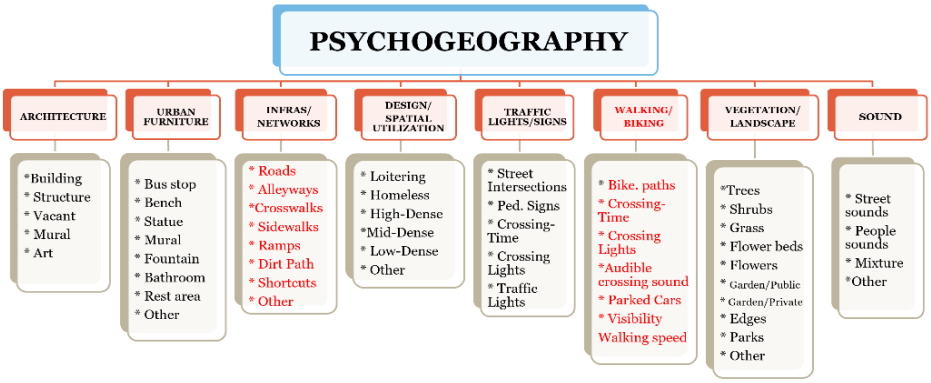

Figure 3: Draft categories that can all be made into capture. The user can either pick or recreate their own and use the edit control on the app to redesign the interface.

[13] Kopytoff (1987:10) defines the ecumene as a "region of persistent cultural interaction and exchange. Kroeber (1948:423), recalling that the Greeks in antiquity used this term for "the inhabited world, "comments that it "has a modern utility as a convenient designation of the total area reached by traceable diffusion influences …". Again, a world culture ordered by center-periphery relationship.

4.2 Step 1: Creating the basis for the app

This process is set up by individual students who sets up what the app will capture and how it is design based on their area of research and interests, to start this process, the student conduct ten interview in the neighborhood and select candidate that agree to participate. The Apps is built around the interview responses and shared with the candidates who then engage in data collections. If the process shown here is basic, it is to allow for most users to customize the interface. The *Quick-Capture-app* framework provides sufficient information to draw from. The sample on *Fig :2* shows the consistent use of the app in *"after the fact"* context to capture different conditions.

4.3 Step 2: Developing attributes for Capture

The Geo-Emotions function on the *Quick-Capture-app* is developed for more users' freedom (customizing, decide what to capture, design the buttons) as they see fit with the context and personal-cultural preferences. The flexibility makes it attractive for participatory *"Metaverse-Play"* style and can _leverage on spatially enabled data for urban applications, - catalyze the development of 3D geo-information by Citizen, _make sense of big geospatial data and digital twins in the built environment, _cater to disciplines such as architecture, Fashion, Interior Design, History preservation, urban planning, game, real estate, etc…to serve the 3D GIS ecosystem while continuously exploring new frontiers in the evolution of city design and building design through system thinking. The proposal uses 3 basic attributes to represent what is captured on the map.

Points are for all visible physical structure or infrastructure (bus stop, road, light, building etc.), represented as a point on the map _ ***Lines*** are for movement capture and tracing the trajectory of the users, represented as a line on the Map. _ ***Polygons*** are for creating close loops of an area of studies. (e.g._in a park, area can be outlined to show site of intervention).

Figure 4: the three built in attributes for capture and their representation on a map. *Points* (with camera option), *Lines* (with tracing option) and *polygons* (tracing option).

5. Designing user interface and capture

The user interface can be designed based on the user's needs. This step is done by the students. One or all categories can be used, and Data capture can be tied to individuals, groups or community, the ideal scenarios is at the city/community/neighborhood level, hypothetically, a city is considering launching a citizen-engaged campaign to better understand how the designs and improvements in the city will/are affect(ing) the citizen to better rethink city planning and learn from the users and to better serve future neighborhoods. This approach is in line with sustainable future and healthier alternatives to encourage more citizen experiences in the buildings and streets. To support this effort, users use *Quick Capture* to collect emotions DATA to serve the ongoing conversation about the future project by spatializing their thoughts through the mapping and visualization.

Figure 5: (Left) three draft of a user interface showing *Urban Infrastructure* - *Spatial Utilization* and *Urban Sound*, the choices are illimited and the App will be built to address customization for each individual user to reimagine the capture as needed. (Right) a proposed basic capture as it will spatialize in a Map. The lines represent the trace of the user with the emotion in a color coded. The points are the relevant pictures of the experience.

Procedure: _users join a *geo-Hub Group* hosted at Georgia Southern University through a link _ they download the App. _start the experience by selecting the emotion button with the mood. All three categories can be used concurrently; this means that a user can be *surprised* and *happy* at the same time and as the emotion ends, the button can be turned off independently. The same is repeated for all categories, with possibility to take pictures that attach to the map. Fig. 5 *(Right).*

5.1 Geo-Registration and Cloud Data process and management

Emotion's captures are reregistered following the same process as Scanning *(Fig.3)*. Captures are immediately uploaded to the cloud, processed, and finally geo-registered. This mix of textual, lines, points and Map, can then be leveraged to *(1)* – allow users to produce a crowdsource digital representation of their real-experience with emotive attributes. *Fig. 1. left* (2) – append the space model with the trace of their experience *Fig. 1. Center* (3) – participate to increasing the performance of device platform for AR/VR/M/R applications *(as the environment will require scanning less often)*, and (4) – increase the accuracy of where objects are placed in relation to the user within the environment in AR/MR applications.

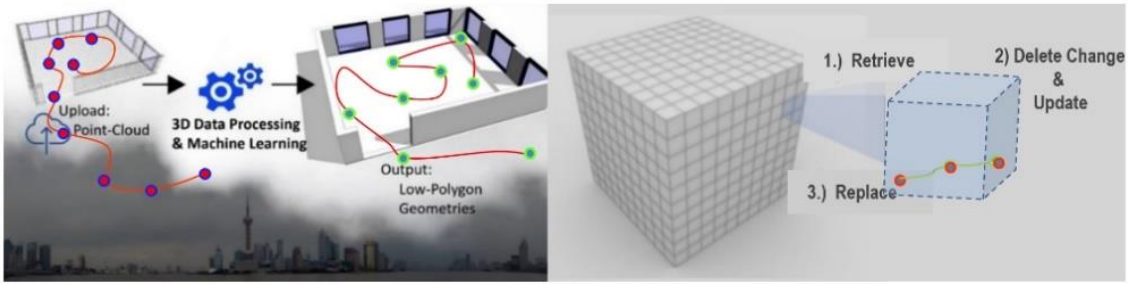

Figure 6: Left: Point, line, and Polygons as they will be represented on the map, *(center)* Data processing scheme through Machine Learning with trace of experience indoor, *(right)* 3D Cube LiDAR grid dataset retrieved-Detected & Updated, then deleted and replaced. *Images courtesy of Geoff Taylor+ Christine Wacta. 2017.*

5.2 Expected results

***Geo-Emotions-Capture App design*:** develops and design *Emotions-Capture App*, to give individuals freedom to capture/share emotions and thoughts as they emerge from urban encounters and experiences and help create and enhanced human habitus modeling and mapping efforts for urban human emotion capital in quantifiable means through the creation of a *Geo-info-HUB* with monitoring Dashboard; - Developing methods to link observed behavioral patterns of the user's urban lived-experience to changes of habitus or emotional reactions; - and Analyzing the spatial pattern of human habitus of spatiotemporal and the utilization volume *(density of user in a space and time)* .

5.3 Geo-Info-HUB

With the develop of a cloud-based platform with open-source capability to provides accessible platform to the public for a collective intelligence gain on people experience on a global scale. Data spatialized is compared-contrasted by location, time, and culture.

Web Story Maps: develop a series of web story Maps with students work results shared online for education. This proposal hopes to help close the gap between the office architect/Designer of today and the solution engineer Designer of tomorrow. The *AI* integration will expand the architect and designer's training into a broader array of new and innovative cross-fields where the future graduate is transformed into an entrepreneur, a start-up leader whose mission is to evolve, Re-imagine and RE-purpose the design services based on research and complexity of the urban and human systems, with the skills to deduce how to gain strategic advantage using different kinds of intelligences for helping evaluate the appropriateness of urban applications for machine learning in urban computation. A *collective-intelligence* approach will be developed as an integrated core to curriculum component through *"pilot projects" and workshops by Georgia Southern University* where the *Geo-Hub* is being set up. The *solution-designer* will then spearhead new research initiatives in the domains of 3D geospatial urban data and AI, uhuman analytics, and Geoscience in ways that advance the study of the influence of geographical environment on the mind behavior of the user in *psychogeography* and space making studies.

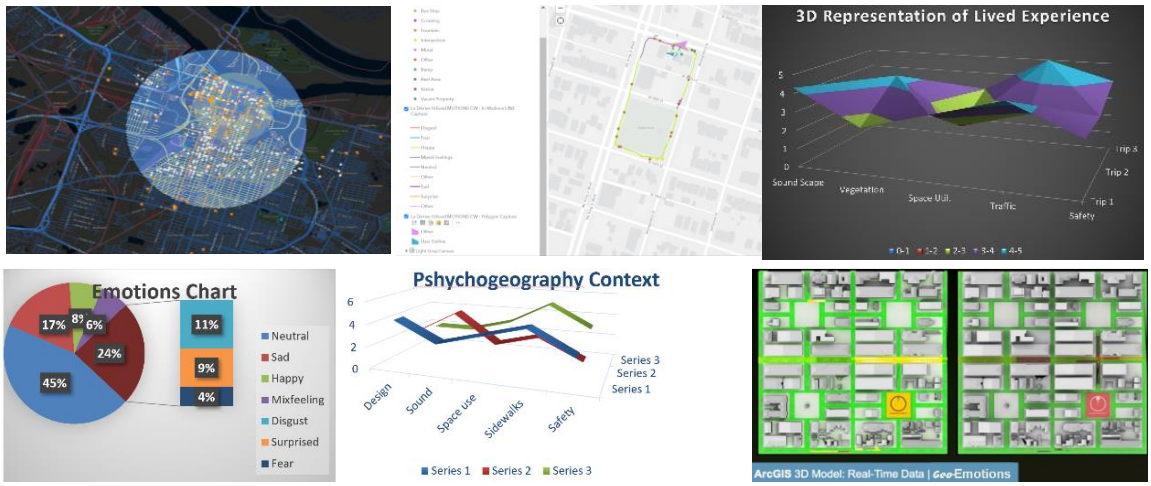

Figure 7: sample expected visuals. *(Up left)* Map of a city showing all experiences at once. *(Up Center)* sample capture viewed on the map showing points and lines. *(Up Right)* suggested spatialization showing a 3Dsurface projection. *(Bottom Right)* Projection Mapping of real time data on3D printed Model. *(all suggestions)*

6. Benefits

Collaboration and Pilot with the community: Our work sets the scenes for integrating intelligent subjective data collection and analysis processes in urban and human analytics, which is particularly useful in urban and design studies.

T*esting feasibility in Design schools*: Georgia Southern School of Human Ecology will facilitate a holistic integration of scientific research component with (AI) through App builder and testing into research and education, this will provide a new milestone for small- and large-scale data analytics and help build on the Physical infrastructure: existing data infrastructure of *extruded city*, *Google 3D*, *OpenStreetMap* etc… the curriculum will gain from a tested methodological approach and from theorizing of this proposal, _ Universities across the globe will be invited to test and expand this research toward more discoveries with national and international communities where groups will gain visibility in making their individual voice heard and gaining greater access through increased understanding and inclusiveness; _ local planners and officials will benefit through increased competence resulting from capacity building and heightened knowledge of encouraging Collective Social Responsibility to urban experience.

7. Potential for Collaborations

Dissemination and Networking Activities: ESRI is involved in a wide range of research, education, consultancy programs with established links to renown international networks [UN, Defense, Government, Association for Tourism and Leisure (ATLAS), and various universities and non-governmental enterprises. Our use of Geoscience tools in design allows us to connect with scientific research activities and finally bring visibility to one of the CORE and essential field in the history of humanity.

Skills Development-Advanced Training: students will take the stage and present their research at international conferences and participate to essential discussions on environment. conferences, research seminars and workshops will expand this work and help students develop effective tested results, build a *geo-Hub.* The development-deployment involves *pilot project with hands-on training in (AI)* and its applications in the design experience and reinforces student learning.

Dynamics of Discovery: innovation on an open-source platform can be a complex, social process, hosting this research in an academic institution allows to work in a forward-thinking environment with direct application-testing for innovative technical adaptations in design-architectural field.

CONCLUSION

This research proposes a necessary overhaul of technological, human-environmental approach for a pragmatic therapeutic and healing urban design, supported by geoscience and cognitive sciences, where the advancement of technology with embedded *(AI)* capability supports optimizing, streamlining, expanding human experience. This contrasts with conventional methods as it develops emotive information, spatiotemporal live feedback. We argue that striving for statistical significance in human-urban science requires moving away from conventional methods, which typically silo data-collection phase from data-analysis, this proposal performs data collection and analysis concurrently, using intelligent processes in real-time to guide the subsequent data collection steps. The analysis of users' feedback through *AI-based feature extraction* and the combination of feedback with location promises significant acceleration and superior results. The spatiotemporal reaction is crucial for the *Cause and Effect* without delay. If COVID-19 took the world by surprise,

it also helped break down deficient-redundant systems, and exposed the core issues. Current enhanced smart technologies are equipped to tackle increasingly complex environment while respecting interdependencies.

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