

# Adaptive Resumes in Disrupted Futures

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## Abstract

As the impacts of the climate crisis continue to unfold, more and more workers will become displaced (International Labour Organization). While the bulk of disruption will be felt by the working poor in the third world, every part of the economy will eventually be impacted. Within the United States, millions of people will face dramatic changes to the environment because of rising temperatures, widespread fires, flooding, and more. In response, there will be an increased need for workers at all levels to migrate or switch employment sectors. As a design researcher, I am specifically interested in how design artifacts play a role in worker cross-sector mobility. There is one crucial artifact that plays a facilitating role within this dynamic: the resume. The resume is a seemingly innocuous player in the job-seeking process. However, when viewed as a narrative artifact, it becomes obvious that the resume has untapped potential. As workers seek to enter new and unfamiliar domains, they will need better tools to help them construct relatable narratives about their unique blend of experiences and skills. Over the last two years, my team has been examining the space of worker adaptability through the development of a solution called Real CV. This project seeks to help workers articulate their strengths and translate domain-specific abilities and experiences into narratives that can be understood by a wider audience. Put another way, I seek to update the format of the resume to help workers become more adaptable to their evolving surroundings. This paper will identify weaknesses with the CV through a critical intersectional lens (Booyesen, 2018) and will detail the use of a constructive design methodology (Bardzell et al., 2015; Dorst, 2013) to examine an updated resume system. In the end, a concept for a Real CV application is presented which showcases the necessary criteria in a more inclusive and adaptable resume format.

## Author keywords

Resume; Constructive Design; User Interface Design; Migration; Climate Crisis

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## **Background**

As the climate crisis unfolds, our work lives will increasingly be marked by disruption. The primary drivers behind this disruption are unprecedented levels of displacement or migration and changes in labor demand. In terms of climate-driven migration, an estimated 143 million people will be forced to migrate by 2050 (Podesta, 2019). This is on top of the millions that have already been forced to move because of extreme weather, floods, fires, and rising water. The most extreme disruptions will be felt by very poor areas like Latin America, sub-Saharan Africa, and Southeast Asia. There are very real concerns for these populations as the future is likely to bring food and home insecurity, discrimination in foreign countries, poor health, and even death to many. While the plight of these populations may be the gravest, climate change will not discriminate in its effects on human life.

Workers within every sector and economic class will have their lives disrupted in some way. Middle- and upper-class workers in countries like the United States will be forced to abandon careers or move between sectors with little to no warning. It is difficult for workers to transition between sectors, especially during times of societal change (Kinder & Lenhart, 2019). While there are many factors that contribute to this difficulty—including the fast pace of technological development and limited access to training opportunities—there is an important factor that is especially relevant to design: communication. Workers who are forced to move between sectors have the undue burden of convincing employers that they are worthy of employment. The resume or CV usually does the heavy lifting in this dynamic as workers attempt to communicate their relevant skills. However, as this study will unpack, it fails as a useful communication artifact when it tries to communicate cross-sector transitions. Before we get too in-depth about the resume's failure, it is important to understand the scope of the coming workforce disruption within the United States. The two primary drivers behind this disruption are internal migration driven by extreme weather and a shift in demand within the labor market. A third factor, the acceptance of transferable skills from unconventional domains, can play an important role in worker mobility.

### *Climate-based migration*

Recent studies on the potential impacts of climate change on the U.S. provide a useful case study to examine how everyone—not just the third-world poor—will be impacted. In 2020, ProPublica conducted an analysis of how each of the major factors of climate change—heat, fires, extreme weather, sea levels, and crop yields—will impact each region in the U.S. (Shaw et al., 2020). Their findings showed that major effects will play out in most areas of the U.S. and will likely cause people to migrate within the country. There are many reasons why Americans might move: extreme heat in the southwest, fires in California, poor crop yields in the south, and rising water on the eastern seaboard, great lakes area, and Mississippi River Delta. On a smaller scale, extreme weather has the potential to disrupt localized communities anywhere in the country. Consider Greenville, California that was destroyed by the Dixie wildfire (Anguiano, 2022), or Midland, Michigan that was flooded by a dam which broke after record rainfall (Earth Resources Observation and Science Center, 2020), or Fair Bluff, North Carolina that was hit by two hurricanes within two years (Graff, 2019). Lustgarten projects that 162 million Americans will experience a decline in the quality of their environment, with 93 million experiencing severe changes by 2070 (Lustgarten, 2020).

While the changes within the U.S. are not catastrophic for most regions, they are significant enough that large numbers of people will no longer be happy with the climate or environment of their region. It is realistic to think that a sizable number of people will grow tired of endless days of 100F°+ temperatures (Livingston, 2020), or wildfire anxiety (Lahr, 2020) and seek to

move to other regions. The Northern part of the country is the most obvious destination as warmer weather will make the region even more livable and could lead to economic booms (Shaw et al., 2020). Specific predications around migration are incredibly complex but conservative estimates predict that a sizable number of Americans (32-45 million or >10% of the total population) will migrate within the country as a direct result of the climate crisis (Fan et al., 2018).

### *Labor market demand*

Running counter to regional migration, we will also see climate-driven workplace disruption brought on by industrial shifts. As the effects of climate become more dire and we (hopefully) move into low-carbon economies, scholars note that many existing jobs will either change, emerge, or disappear (Brown, 2015). Of course, most of this disruption will fall upon the energy sector as we move to renewable energy production. Workers will move out of the oil fields and into the wind farms. In fact, careers in wind and solar energy are projected to increase by 46-58% over the next 10 years—some of the highest growth in any sector (Peach, 2021). Green jobs require a different skill set than their non-green counterparts. Studies show that they generally require more education, training, and abstract thinking skills (Consoli et al., 2016). However, energy is not the only sector that will change. Some career changes will initiate out of necessity as our society scrambles to mitigate the effects of the climate crisis. To this end, it is estimated that we will see a growth in social services as a result of climate disasters, infrastructure planning and development, environmental research and planning, and more (McCleary, 2020). This is just a small sampling of the changes to labor markets in response to an evolving climate. Many workers will need to switch careers or evolve within their sector to remain viable.

### *Unconventional transferable skills*

Regardless of the driver behind a career change—whether it be migration, sector evolution, or societal need—the demands of the U.S. labor market will undergo dramatic changes in the coming decades. Workers will need help as they seek jobs in new sectors or regional markets. Research into how workers transition between jobs reveals that the process is difficult because “Hiring managers typically demand that workers demonstrate the exact skills and work experience ‘required’ to do the jobs for which they’re applying” (M. Weise, 2020). As workers are forced to move into unfamiliar territory or take on green jobs that did not previously exist, it will become increasingly hard to match previous and required skills or experiences. In many situations, it will be impossible to provide a one-to-one skill match from strictly work experiences. However, that does not mean that workers do not have those skills. There will be a need for workers to be able to identify relevant skills from other areas of their life.

Feminist scholars have thought about this dilemma for many years as the same dynamic exists for femme workers, especially working mothers, who try to enter patriarchal careers. Lotte Bailyn and others have argued that our experiences at home have a direct impact on our work and that the relationship between our home and work lives should be much more fluid (Bailyn, 2006). In reflecting on your own life, it is easy to see how experiences at home have led to new skills that transfer into the workplace. For parents, the Covid pandemic surfaced many of these new skills. Think of all the new skills that were acquired as parents had to become homeschool teachers (perseverance, crisis management, empathy, etc.). We gain transferable skills in many other avenues of life too: in personal relationships, as a member of communities, and even in moments of pain (harassment, victimhood, loss, etc.). In displaced employment settings, workers will greatly benefit from being able to connect transferable skills from their “life” contexts to the requirements for employment.

## Research goals

As workers struggle to enter new sectors and communicate their experiential and unconventional value, they are forced to use an old tool: the resume. However, in thinking about how the resume fits into this context, two big problems arise. One is that resumes follow a rigid format. This is mostly because experiences are situated chronologically through the lens of position and work activity. This format pushes the narrative about work experience to be industry-specific and tends to ignore underlying, transferable skills. For example, an oil drill operator may list “Operate pumps or compressors” as a direct work experience. While this is technically correct, this description provides a limited understanding of worker ability. Someone outside the oil industry is not likely to know all the skills that are necessary to complete this task, which could include attention to detail, critical thinking, operations monitoring, coordination, judgement, reading comprehension, quality control analysis, troubleshooting, manual dexterity, and more (skill examples taken from (O\*NET, 2022)). This list of skills can be applicable to many other jobs in many other sectors, but the resume limits this worker’s ability to make those connections. This format also requires skills to be directly connected to work experiences. Relevant skills that were acquired at home or through other ‘life’ experiences do not have a place to live in existing resume formats.

The other failing of resumes as we use them today is that workers are often unaware of the skills that employers require. This is especially true for workers transitioning between sectors. However, Weise et al. have also found that the ‘required’ skills of the same job can differ regionally (M. R. Weise et al., 2019). This means that even within the same job, a worker in Florida may require a fundamentally different skillset than one in Michigan. This reality is not obvious for most workers, making their post-migration job search even harder.

Through the above research, we can build the following logical structure to lead to a hypothesis for this study:

1. Climate disruption is forcing workers to transition to new and unfamiliar fields.
2. Through the resume, employers want to see a direct connection between required skills and applicant experiences on the resume.
3. Workers do not know what skills are necessary for these new fields.
4. Required job skills can vary by region.
5. Workers have useful, relevant skills that are acquired in their home/personal life.
6. Workers have a rigid concept of a resume and may not have the ability to abstract experiences into skills vice versa.

Through this inductive logic, the core problem becomes one of communication via the resume. Workers who are displaced or are transitioning between sectors need help advocating for themselves in unfamiliar spaces. This is where design comes into play. A constructive design approach can help conceptualize a new tool that can systematize the creation of a new kind of resume. In turn, the prototype can act as a catalyst to advance discussion about the future of work and the need for a more progressive understanding of ‘experience.’ In the sections below, I will discuss the constructive design methodology and describe the resultant prototype. In the end, I will reflect on the prototype and discuss the usefulness of constructive design in this type of problem space.

## Methodology

This project is an ideal candidate for a constructive design inquiry, which emphasizes creative production as the central means of knowledge production. When working in ill-defined contexts (like climate-disrupted futures), designers can utilize constructive design and their unique form of abductive logic to generate prototypes that reveal understanding that is otherwise unattainable. Bardzell, et al. describe constructive design as a “thing-making practice whose objects can offer a critique of the present and reveal alternative futures, while remaining grounded in empirical science, behavioral theory, contemporary technological possibility, and socio-cultural practices.”(2015).

However, there are many ways to go about “thing making,” or prototyping, and the specific methods can result in different conclusions. Wensveen & Matthews provide a helpful framework to think about how and why prototypes get integrated into research (2014). This project is speculative in nature and is responding to a general set of principles that were derived from observation and secondary research. The problem space is situated within a context—the work transition experience—but does not involve specific users in its development process. To that end, using Wensveen & Matthews as a guide, I will employ prototypes as a “research archetype.” Rather than act as a tool to directly gather data, the prototype will serve as a physical embodiment of the understood concepts which integrates “specific examples to demonstrate [its] potential and justify that they constitute a contribution.” In this way, the prototype acts a sort of “design exemplar” which itself acts as a form of knowledge encapsulation (Bardzell et al., 2015) that can contribute to the broader discourse of ‘work in disrupted futures.’

To provide structure to the prototyping process, we look to Dorst’s “Academic Design” (Dorst, 2013). As a framework, Academic Design enables designers to operate in exploratory spaces, where problems are loosely understood and solutions are difficult, by relying on “design abduction” to create a central, operational model. This central model is constructed through a combination traditional design activities (divergent exploration) and research into the problem domain (steps 1 and 2 in Figure 1). Through that process, a conceptual frame is identified to provide workable direction within the constellation of possible directions. This process enables designers to propose new solution directions that are grounded in both contextual understanding and in conversation with existing literature. With a model in hand, the designer can then enact an iterative process of design and reflection which results in prototypes and reports back to the relevant fields (steps 3 and 4 in Figure 1). In the end, the prototypes that get developed through the process—and thoughtful reflection on them— have the potential to formulate a variety of dissemination: new design knowledge, potential innovation or commercialization opportunities, and an opportunity to speculate about possible futures and their implications (steps 5,6, and 7 in Figure 1). I will now discuss the creation of the prototype, beginning with the development of a frame.

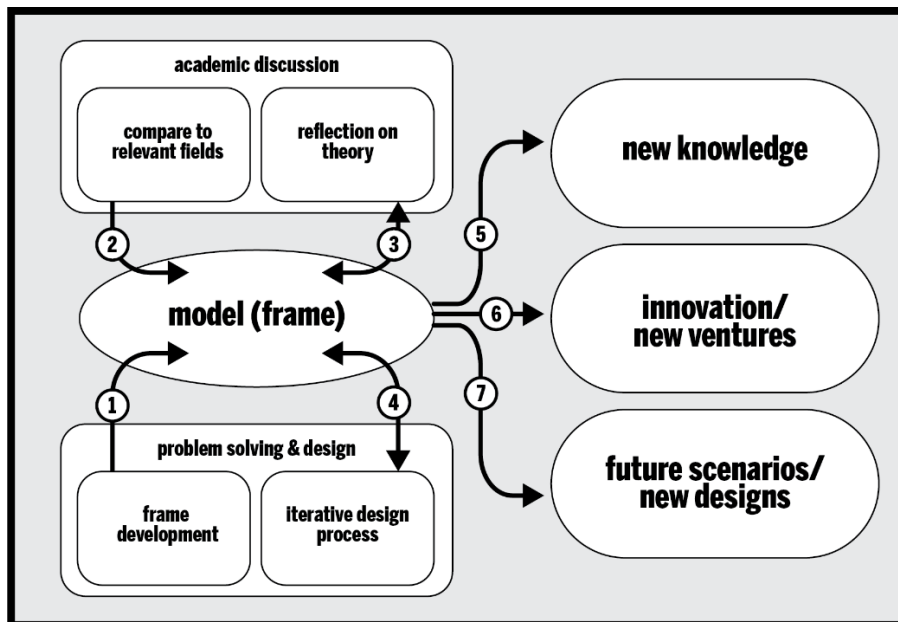


Figure 1. Dorst's Academic Design framework.

### Frame Development

Following the Academic Design process, it is important to first develop a frame or 'model of understanding' for a potential solution. The frame for this research was developed in a rather circuitous way. Since the beginning of the Covid-19 pandemic, I have been working with a research team that is investigating the academic CV. More specifically, this work is inquiring into how the academic CV perpetuates many of the negative aspects of academia, namely neoliberal competition (Besley & Peters, 2006; Cannizzo, 2018; Maisuria, 2020), and systemic racial and gender inequalities (Colby & Fowler, 2020; DeCuir-Gunby & Gunby, n.d.; Muñoz & Villanueva, 2022; O'Meara et al., 2017; Toutkoushian & Bellas, 1999; Williams June, 2022) and is leading to high rates of burnout and turnover among academics. This research uncovered two insights that have led directly to this new inquiry. First, we uncovered that the rigid structure of the CV, shaped by recent trends in quantification of academic assessment, does not adequately portray faculty effort. The CV hides the 'invisible' labor (service commitments, student concerns, etc.) that many women and under-represented minorities endure, putting them at a disadvantage against their privileged colleagues. The other key insight came as we inquired into the difficulties of leaving academia for private industry. Because it focuses on academic work product and not skills, the CV is not built to help faculty transition out of academia. Instead, faculty must translate their academic work into industrial skillsets for a resume. So, we started operating on these two basic ideas: 1.) the format of the CV is not sacrosanct and should be revised to better serve its role and 2.) the resume acts as a translator, connecting past experiences with expected skills.

This idea of a resume-as-translator became our operating frame. Through it, we designed several prototypes that serve academics (Wheeler, 2020) but realized that the core principles of our inquiry could be usefully applied to other sectors. There are several settings where workers could benefit from this kind of translator, including future workers who are displaced because

of climate. However, the ‘disrupted worker’ context is unique from the academic context in several ways. To better understand these differences and examine how a design would need to operate in this setting, I began the process of constructive prototyping, which I will describe below.

### Prototyping process

In thinking about the prototype, there were two distinct components that needed to be developed as part of the ‘translator’ concept. The first part is the raw translation of experiences into requisite skills. The second part was the communication of those raw skills into the new relevant work contexts. With this in mind, the prototyping process required a pairing of system mapping with a contemporary UI/UX practice. System mapping would allow a better understanding of what was required to complete the input-translation-export process necessary to complete both components of the design. Then, with that system-level understanding, a user interface prototype could be developed to better understand the specific details of how the interaction would work.

### Real CV System

The system map, displayed in Figure 2, proposes a new way for core elements of the solution work together. The central component that powers the concept is a “translational artificial intelligence (AI) engine (Translator AI in Figure 2). The promise of the Translator AI is that it can generate a resume that matches user skill, regardless of which experience contexts skill were developed within, to the required skills of a position. Through the user interface (Real CV UI), a user uploads past experiences or accomplishments from their work history. In this way, the Real CV UI acts as a container where users can capture any potential information that might go into a resume but does not require them to filter their input in any way. It also allows the user to capture non-work experiences that they may encounter in their home or personal life. This feature will eventually allow users to connect life experiences to their resultant, useful workplace skills. All past experiences get translated into skills, which are saved in a central Personal Skill Library.

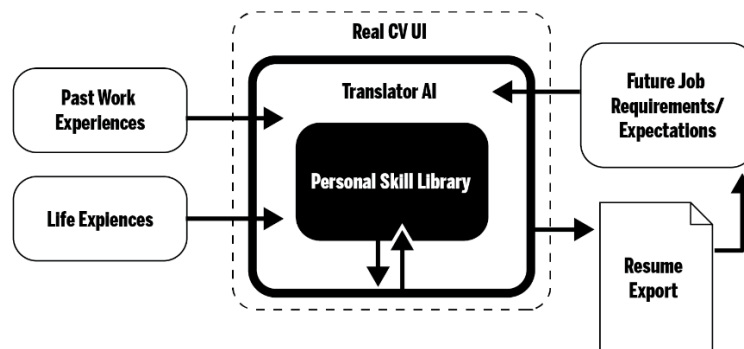


Figure 2. Real CV information process

Once a user has identified a position they would like to secure, they load it into the UI, where the Translator reverse engineers the required skills. Behind the scenes, the AI will compare the written job description to generally known trends about the position or field and integrate any unique regional skills that may be required. Once it has identified what the position requires,

the AI will reference the Personal Skill Library to match the necessary skills. For example, if the position requires the skill of ‘critical thinking,’ the system will simply identify that the skill has been acquired somewhere in the past. It does not matter where it was acquired (a previous job, at home, etc.), rather just that it was acquired somewhere. Once the maximum amount of skills have been matched, the user can export a formatted resume that communicates their ability to perform in the position, regardless of their past work experiences.

### Real CV User interface

To get a more nuanced understanding of how this proposed system would operate, a user interface (UI) prototype was developed using Adobe XD software. The prototype was developed pragmatically and utilizes contemporary best practices around usability (Nielsen, 2020) and user experience (Yablonski, 2020). The intention behind this approach was to be as realistic as possible to best understand what how the interface would need operate to accomplish the goals of the system plan.

Figure 3 depicts the primary dashboard of the Real CV UI. On the dashboard, users upload individual experiences or accomplishments from past work or life experiences. With the exception of ‘life’ experiences which is positioned first, work experiences are organized chronologically by position to mirror a traditional resume. The dashboard essentially acts as a container for all the user’s past experiences. It is just a holding zone that will get utilized later. The dashboard also collects more general information about the user’s abilities and history, including educational background, languages, and technical skills. Users need to be explicit about these details because the information is relevant to employers but cannot be captured through the translation process. Later, I will discuss how this information gets included in the new resume but is de-emphasized to better highlight core skills.

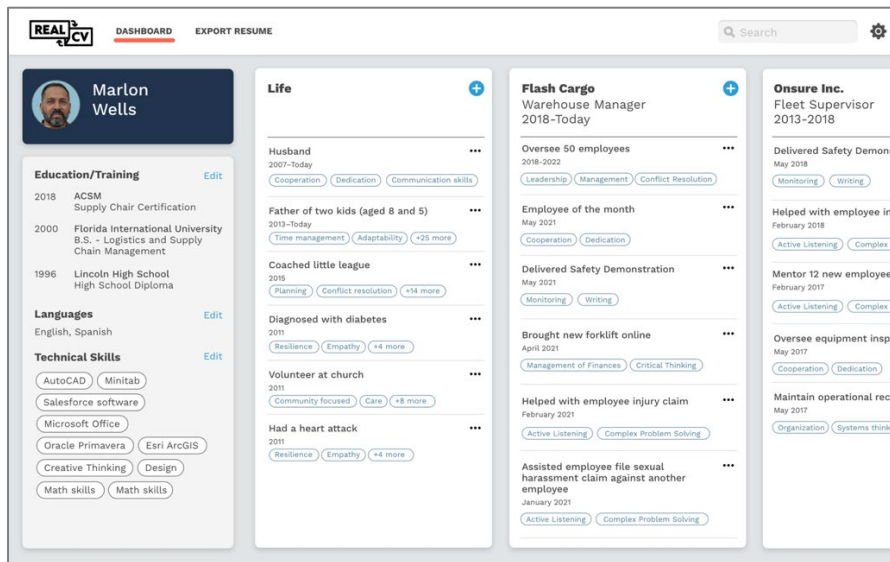


Figure 3. Real CV primary dashboard

When the user is ready to add a new experience to their dashboard, they simply click the ‘+’ sign associated with each top-level category (the life category or under a specific position). Figure 4



depicts the initial step of adding these experiences. In the form field, the user is prompted to 'Search for experiences or accomplishments,' where they can just start typing in the experience they have in mind. Alternatively, they can browse suggested experiences that they system has identified for them. These experiences are identified from what Real CV has learned from other users in similar work environments. They are also optimized to suggest experiences that demonstrate a range of underlying skills. To work best, Real CV needs to have a detailed summary of work experiences and these suggestions aid that by helping users recall experiences that they would have otherwise forgotten or overlooked.

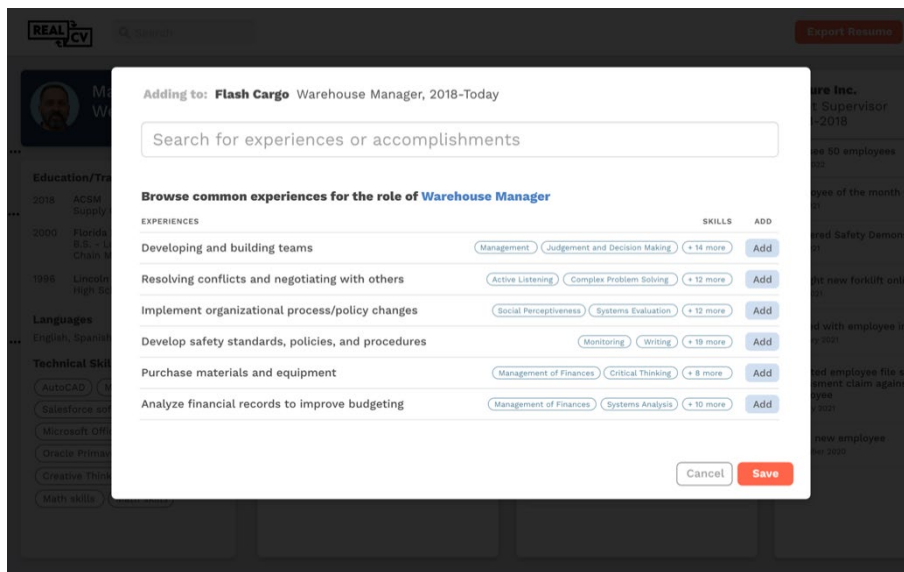


Figure 4. RealCV dialog to add past experiences

Once the user enters or selects an experience, the Translator AI converts it to its underlying skills and displays that information for them. In Figure 5, you can see how the UI provides a detailed breakdown of all the skills that the AI believes are part of the experience. The user then has the ability to refine which skills remain tagged to the experience by checking or unchecking the skill. Once the user clicks 'save,' the experience is logged to and all of the associated skills get saved to the their Personal Skill Library. The user can repeat this process until they have captured all of their relevant experiences.

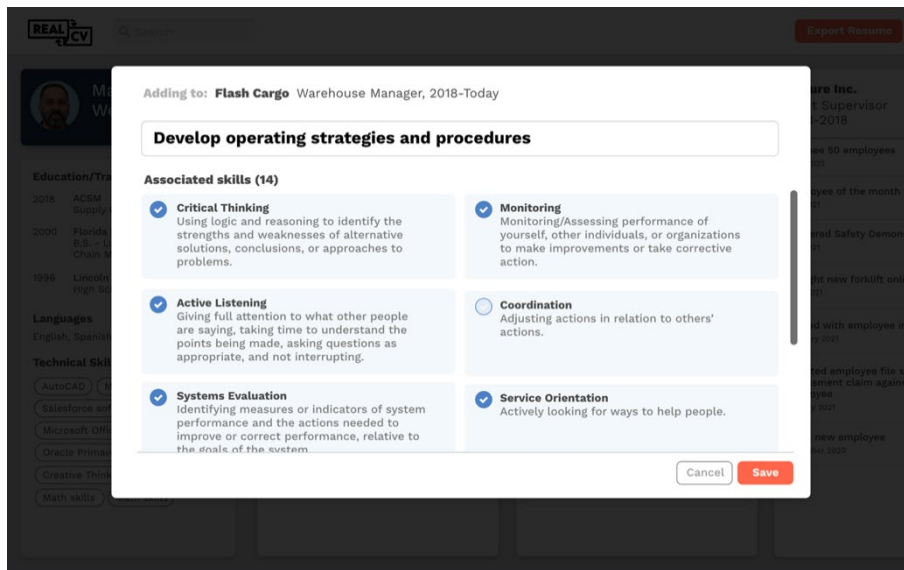


Figure 5. RealCV past experience dialog showing skill translation

When the user is ready to export a resume, they switch to the 'export resume' tab in the top part of the UI (Figure 6). In this area of the UI, the user can prepare their resume for a specific job application. They must first identify which job they are applying for by selecting either a generic job title or by searching for a specific listing on the web (this is seen in the panel on the left side of the UI). In Figure 6, the user has found a specific job listing. Once found, the Translator AI interprets what skills are necessary and cross-references them with regional skill differences. It then searches the Personal Skill Library to match the user's skills to those required by the position. The user can review which skills it has identified and see the related experiences for each skill; individual experiences can be unselected if they choose to leave them off the resume. The UI also indicates when a skill is necessary but not found in library, as seen via the 'Monitoring' skill in Figure 6.

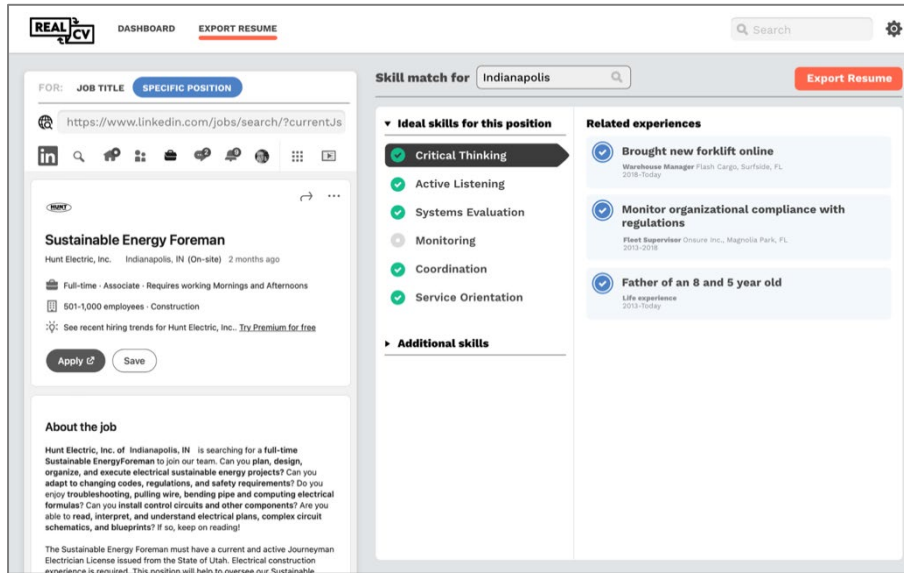


Figure 6. RealCV export resume screen

Once the user is satisfied with their skill/experience selections, they can export their unique resume to be included as part of their application. Figure 7 depicts an example of a resume export. The resume does include traditional information that would be expected on a resume: name, contact info, education, and technical abilities. However, within the core of the resume, the narrative is organized by required skills rather than job title, as would be traditional. Each skill is highlighted and supported by descriptions of the related experience. In Figure 7, the flexibility of the system is demonstrated as 'Complex Problem Solving' is supported by both work-related experiences and life experiences (parenthood). Formatting the resume this way reinforces that the worker has the right skills for the job and deemphasizes specific job titles or other information that could be viewed as disqualifying. Each resume export is intended to be used only once, for the specific job application. The real benefit of using Real CV rather than making a resume by hand is that the resume can adapt to each unique job listing. The system enables an infinite number of skill combinations that can be adjusted to best advocate for the user.

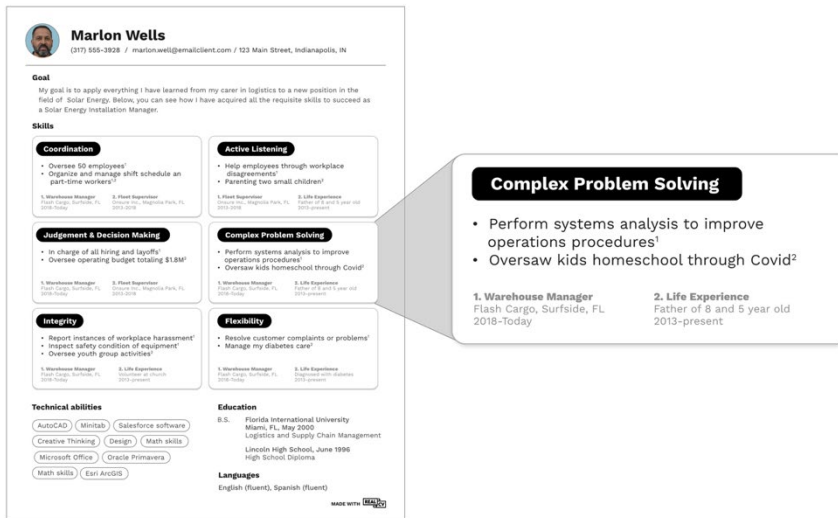


Figure 6. RealCV resume export

## Discussion

Following Dorst's Academic Design structure (Dorst, 2013), the creation of the above prototype should lead to new understanding on several fronts: new knowledge, innovation, and future scenario identification. In the sections below, I will outline the developments within each category.

### New Knowledge

As previously mentioned, according to Bardzell, et al. (2015), constructive prototypes are a form of embodied knowledge. They are expressions of design abduction which uniquely combines known and intuited information about a future problem space. To that end, the Real CV prototype is now able to enter the discourse about work in climate-disrupted futures. It makes several specific contributions to the discussion. First, it calls into question the usefulness of the traditional resume in these futures and demonstrates that there are other possible solutions. Second, it suggests that worker value be measured in skills rather than experiences. Finally, it raises questions about relevance of home or life experiences in the context of the workplace. The Real CV prototype can hopefully inspire further creative development around how to tell stories about the usefulness of non-work experiences within work contexts. As the discourse around the future of work continues to grow, Real CV can act as an design exemplar to foster discussion and debate.

### Innovation

Real CV provides a path for innovation via its centralized Translator AI. Artificial Intelligence is not a novel concept within the area of work and labor. In fact, an entire industry of workforce development has been built around the use of artificial intelligence to identify weaknesses in worker skillsets (M. Weise, 2020). Tools like Sky Hive (SkyHive, 2022), FutureFit AI (FutureFit AI, 2022), and Emsi (Emsi, 2022) allow users to leverage AI to understand their current skills and compare them against the expectation of their industry or employer. However, instead of

advocating for individual workers, these are enterprise-level solutions that focus on helping employers optimize their workforce. The Real CV Translator and UI provides an example of how an AI can tap into “big data” to be optimized to help individuals. The prototype also presents a path that helps counteract bias in hiring process. For a variety reasons, hiring AIs are notoriously biased (Dastin, 2018). The reality of the contemporary hiring process is that an algorithm will review a resume before a human will. The AI that is reviewing the full pool of candidates is often looking for keywords that meet the basic criteria of the job (Parikh & Forbes Human Resources Council, 2021). Because Real CV generates the resume for the user, it can theoretically optimize the language it uses to mirror requirements of the hiring software AI filters. While we are focused on generating resumes with the Translator AI, there could be many additional applications for its core functionality of converting abstract experiences into concrete skills.

### *Future Scenarios*

Because this project was based in a speculative future scenario, it is difficult to speculate further. However, this work does contribute to the broader discussion around future climate disruption in the United States. While this project was focused on the work component of that future, there are many other topics that still need to be discussed. In the future described in this project, nearly every aspect of life will be altered in some way. This prototype helps other futures researchers visualize a small component of that future with more nuance. In the more immediate future, we know that workers already need to tools to help them find work and transition between sectors. This research also references workforce displacement research that was conducted after the 2008 Great Recession and the 2020 Covid-19 Pandemic. Many of the findings from those moments of disruption were applicable to our speculative future. As a society, we are likely to face more moments disruption that will disrupt work. In being designed for such a distant future, Real CV should be able to inform more immediate crises along the way.

### **Conclusion**

It is safe to assume that work is going to be disrupted in a climate-disrupted future. Workers who are forced to move to regions or into new lines of work need to communicate their skills to potential employers. And, as they exist today, resumes are not equipped to satisfy these worker’s communication needs. Through an exploratory, constructive process, the prototype for Real CV was developed as a design exemplar that addresses the weakness of the resume. The central feature of the prototype became the Translator AI, which converts work experiences into skills. In turn, Real CV, uses that skill library to connect acquired skills to the required skills of a new position. By matching skills in this way, Real CV empowers individual workers to advocate for their themselves in unfamiliar sectors and more easily transition to their climate-disrupted life. Moving forward, my team is focused on developing the translational AI to begin testing its viability in real scenarios. In the end, this project contributes to the growing body of literature around the use of constructive design research. Designers have always had trouble turning design activity into academic knowledge. This project sought to provide a case study on how to use prototyping as an archetype of research activity and then convert that prototype into knowledge via Dorst’s Academic Design framework. The future is fraught with peril. Designers should have major voice in counteracting that peril. The Real CV case study provides a roadmap for other designers to use to develop pragmatic, speculative solutions to the very real problems we face together.

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