INGLÉS II

# TEXT 1

## New Transparent Metal Could Make Smartphones Cheaper.

By Nathaniel Scharping

As smartphones get smaller, cheaper and faster, one essential component remains costly: the screen.

Almost 90 percent of smartphone touchscreens utilize a rare and expensive compound called indium tin oxide, which has kept the price of such screens high. Now, researchers at Pennsylvania State University have developed a new material, called strontium vanadate, that shares the transparent and conductive properties of indium tin oxide at a fraction of the cost.

The researchers detailed their findings in an article published earlier this month in the journal *Nature Materials*. They crafted a transparent metal composed of strontium and vanadium with an unusual configuration of electrons that allows light to pass through while retaining the electrically conductive properties of metals.

### A New Way To Look At Screens

The researchers see smartphone screens, which need to be electrically conductive and transparent, as the most immediate application of their discovery. Indium tin oxide possesses those integral properties but its cost comes in around $750 per kilogram. As a result, when you shell out several hundred dollars for a new smartphone, roughly 40 percent of the cost is tied up in the screen. Both strontium and vanadium sell for just $25 or less per kilogram, according to the researchers. In addition, researchers produced the compound in a film only 10 nanometers thick, making it perfect for touchscreens.

Typically, metals share their electrons freely, which allows them to move throughout the structure uninhibited, much like gaseous molecules. This gives metals their distinctive properties, such as malleability and conductivity. The electrons in strontium vanadate, a so-called correlated metal, behave more like a liquid than a gas, moving slower and interacting with each other in curious ways.

Electrons in strontium vanadate molecules exhibit stronger forms of electrostatic interaction — the forces acting between positively and negatively charged articles. These forces slow down the electrons and cause them to interact in complex ways, according to the researchers. The end result is a metal that retains its conductivity, but is less reflective when light is shined on it, making it transparent. This combination of properties makes it perfect for use in smartphone screens. The researchers also see applications for their compound in a new form of solar cells, as well as smart windows and television screens.

Transparent metal sounds like an oxymoron, but you could one day be reading this story through it.

New Transparent Metal Could Make Smartphones Cheaper - D-brief. (2017). [online] D-brief. Available at: <http://blogs.discovermagazine.com/d-brief/2015/12/24/new-transparent-metal-could-> make-smartphones-cheaper/#.WAuYxo8rLIU [Accessed 19 Feb. 2017].

# TEXT 2

## Researchers want to use hardware to fight computer viruses



Dmitry Ponomarev, professor of computer science at Binghamton University, State University of New York. *Credit: Jonathan Cohen/Binghamton University*

Fighting computer viruses isn't just for software anymore. Binghamton University researchers will use a grant from the National Science Foundation to study how hardware can help protect computers too.

"The impact will potentially be felt in all computing domains, from mobile to clouds," said Dmitry Ponomarev, professor of computer science at Binghamton University, State University of New York. Ponomarev is the principal investigator of a project titled "Practical Hardware-Assisted Always-On Malware Detection."

More than 317 million pieces of new malware -- computer viruses, spyware, and other malicious programs -- were created in 2014 alone, according to work done by Internet security teams at Symantec and Verizon. Malware is growing in complexity, with crimes such as digital extortion (a hacker steals files or locks a computer and demands a ransom for decryption keys) becoming large avenues of cyber-attack.

"This project holds the promise of significantly impacting an area of critical national need to help secure systems against the expanding threats of malware," said Ponomarev. "[It is] a new approach to improve the effectiveness of malware detection and to allow systems to be protected continuously without requiring the large resource investment needed by software monitors."

Countering threats has traditionally been left solely to software programs, but Binghamton researchers want to modify a computer's central processing unit (CPU) chip -- essentially, the machine's brain -- by adding logic to check for anomalies while running a program like Microsoft Word. If an anomaly is spotted, the hardware will alert more robust software programs to check out the problem. The hardware won't be right about suspicious activity 100 percent of the time, but since the hardware is acting as a lookout at a post that has never been monitored before, it will improve the overall effectiveness and efficiency of malware detection.

"The modified microprocessor will have the ability to detect malware as programs execute by analyzing the execution statistics over a window of execution," said Ponomarev. "Since the hardware detector is not 100-percent accurate, the alarm will trigger the execution of a heavy-weight software detector to carefully inspect suspicious programs. The software detector will make the final decision. The hardware guides the operation of the software; without the hardware the software will be too slow to work on all programs all the time."

The modified CPU will use low complexity machine learning -- the ability to learn without being explicitly programmed -- to classify malware from normal programs, which is Yu's primary area of expertise.

"The detector is, essentially, like a canary in a coal mine to warn software programs when there is a problem," said Ponomarev. "The hardware detector is fast, but is less flexible and comprehensive. The hardware detector's role is to find suspicious behavior and better direct the efforts of the software."

Much of the work -- including exploration of the trade-offs of design complexity, detection accuracy, performance and power consumption -- will be done in collaboration with former Binghamton professor Nael Abu-Ghazaleh, who moved on to the University of California-Riverside in 2014.

Lei Yu, associate professor of computer science at Binghamton University, is a co-principal investigator of the grant.

Grant funding will support graduate students that will work on the project both in Binghamton and California, conference travel and the investigation itself. The three-year grant is for $275,000.

New Transparent Metal Could Make Smartphones Cheaper - D-brief. (2017). [online] D-brief. Available at: <http://blogs.discovermagazine.com/d-brief/2015/12/24/new-transparent-metal-could-> make-smartphones-cheaper/#.WAuYxo8rLIU [Accessed 19 Feb. 2017].

# TEXT 3

## Encryption method takes authentication to a new level, improves privacy protection

VTT Technical Research Centre of Finland has developed new kinds of encryption methods for improving the privacy protection of consumers to enable safer, more reliable and easier-to-use user authentication than current systems allow.

The method combines safety, usability and privacy protection, when, until now, implementing all three at the same time has been a challenge.

"Our method protects, for example, the user's biometric data or typing style," says Senior Scientist Kimmo Halunen.

In biometric authentication, the risk is that a person's permanent biometric identifiers, which cannot be changed, leak out of the database. VTT's method stores data in the database in an encrypted form and all comparisons between measuring results and the database are conducted using encrypted messages so there is no need to open any biometric data at this stage of the process.

VTT integrates new kind of encryption methods, such as homomorphic cryptography and secure exchange of cryptographic keys, to known measuring methods of typing styles.

The traditional authentication based on passwords has proved to be weak, since users mostly select weak passwords, and hackers often succeed in stealing quite large password databases. Recently, companies such as Dropbox and Yahoo have fallen prey to such data breaches.

In addition, new types of user environments, such as smart devices, cars, and home appliances, create challenges for user authentication with the help of passwords.

VTT is now looking for a partner for further processing and commercialisation of this method, which could be available to consumers within a year or two.

Encryption method takes authentication to a new level, improves privacy protection. (2017). [online] Science Daily. Available at: https://[www.sciencedaily.com/releases/2016/09/160929082204.htm](http://www.sciencedaily.com/releases/2016/09/160929082204.htm) [Accessed 19 Feb. 2017].

# TEXT 4

## No GPS, no problem: Next-generation navigation



Simulation results for a unmanned drone flying over downtown Los Angeles showing the true trajectory (red line), from GPS only (yellow line), and GPS aided with cellular signals (blue line). *Credit: ASPIN Laboratory at UC Riverside*

A team of researchers at the University of California, Riverside has developed a highly reliable and accurate navigation system that exploits existing environmental signals such as cellular and Wi-Fi, rather than the Global Positioning System (GPS). The technology can be used as a standalone alternative to GPS, or complement current GPS-based systems to enable highly reliable, consistent, and tamper-proof navigation. The technology could be used to develop navigation systems that meet the stringent requirements of fully autonomous vehicles, such as driverless cars and unmanned drones.

Led by Zak Kassas, assistant professor of electrical and computer engineering in UCR's Bourns College of Engineering, the team presented its research at the 2016 Institute of Navigation Global Navigation Satellite System Conference (ION GNSS+), in Portland, Ore., in September. The two studies, "Signals of Opportunity Aided Inertial Navigation" and "Performance Characterization of Positioning in LTE Systems," both won best paper presentation awards.

Most navigation systems in cars and portable electronics use the space-based Global Navigation Satellite System (GNSS), which includes the U.S. system GPS, Russian system GLONASS, European system Galileo, and Chinese system Beidou. For precision technologies, such as aerospace and missiles, navigation systems typically combine GPS with a high-quality on-board Inertial Navigation System (INS), which delivers a high level of short-term accuracy but eventually drifts when it loses touch with external signals.

Despite advances in this technology, current GPS/INS systems will not meet the demands of future autonomous vehicles for several reasons: First, GPS signals alone are extremely weak and unusable in certain environments like deep canyons; second, GPS signals are susceptible to intentional and unintentional jamming and interference; and third, civilian GPS signals are unencrypted, unauthenticated, and specified in publicly available documents, making them spoofable (i.e., hackable).

Current trends in autonomous vehicle navigation systems therefore rely not only on GPS/INS, but a suite of other sensor-based technologies such as cameras, lasers, and sonar.

"By adding more and more sensors, researchers are throwing 'everything but the kitchen sink' to prepare autonomous vehicle navigation systems for the inevitable scenario that GPS signals become unavailable. We took a different approach, which is to exploit signals that are already out there in the environment," Kassas said.

Instead of adding more internal sensors, Kassas and his team in UCR's Autonomous Systems Perception, Intelligence, and Navigation (ASPIN) Laboratory have been developing autonomous vehicles that could tap into the hundreds of signals around us at any point in time, like cellular, radio, television, Wi-Fi, and other satellite signals.

In the research presented at the ION GNSS+ Conference, Kassas' team showcased ongoing research that exploits these existing communications signals, called "signals of opportunity (SOP)" for navigation. The system can be used by itself, or, more likely, to supplement INS data in the event that GPS fails. The team's end-to-end research approach includes theoretical analysis of SOPs in the environment, building specialized software-defined radios (SDRs) that will extract relevant timing and positioning information from SOPs, developing practical navigation algorithms, and finally testing the system on ground vehicles and unmanned drones.

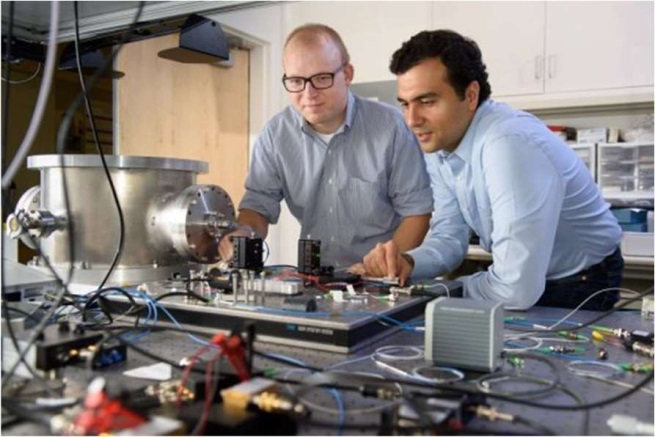
"Autonomous vehicles will inevitably result in a socio-cultural revolution. My team is addressing the challenges associated with realizing practical, cost-effective, and trustworthy autonomous vehicles. Our overarching goal is to get these vehicles to operate with no human-in-the loop for prolonged periods of time, performing missions such as search, rescue, surveillance, mapping, farming, firefighting, package delivery, and transportation," Kassas said.

University of California - Riverside. (2016, October 13). No GPS, no problem: Next-generation navigation. *ScienceDaily*. Retrieved February 19, 2017 from www.sciencedaily.com/releases/2016/10/161013150039.htm

INGLÉS III

# TEXT 1

## New special-purpose computer may someday save us billions



Post-doctoral scholar Peter McMahon, left, and visiting researcher Alireza Marandi examine a prototype of a new type of light-based computer. *Credit: L.A. Cicero*

The processing power of standard computers is likely to reach its maximum in the next 10 to 25 years. Even at this maximum power, traditional computers won't be able to handle a particular class of problem that involves combining variables to come up with many possible answers, and looking for the best solution.

Now, an entirely new type of computer that blends optical and electrical processing, reported Oct. 20 in the journal *Science*, could get around this impending processing constraint and solve those problems. If it can be scaled up, this non-traditional computer could save costs by finding more optimal solutions to problems that have an incredibly high number of possible solutions.

"This is a machine that's in a sense the first in its class, and the idea is that it opens up a sub-field of research in the area of non-traditional computing machines," said Peter McMahon, postdoctoral scholar in applied physics and co-author of the paper. "There are many, many questions that this development raises and we expect that over the next few years, several groups are going to be investigating this class of machine and looking into how this approach will pan out."

### The traveling salesman problem

There is a special type of problem -- called a combinatorial optimization problem -- that traditional computers find difficult to solve, even approximately. An example is what's known as the "traveling salesman" problem, wherein a salesman has to visit a specific set of cities, each only once, and return to the first city, and the salesman wants to take the most efficient route possible. This problem may seem simple but the number of possible routes increases extremely rapidly as cities are added, and this underlies why the problem is difficult to solve.

"Those problems are challenging for standard computers, even supercomputers, because as the size grows, at some point, it takes the age of the universe to search through all the possible solutions," said Alireza Marandi, a former postdoctoral scholar at Stanford and co-author of the study. "This is true even with a supercomputer because the growth in possibilities is so fast."

It may be tempting to simply give up on the traveling salesman, but solving such hard optimization problems could have enormous impact in a wide range of areas. Examples include finding the optimal path for delivery trucks, minimizing interference in wireless networks, and determining how proteins fold. Even small improvements in some of these areas could result in massive monetary savings, which is why some scientists have spent their careers creating algorithms that produce very good approximate solutions to this type of problem.

### An Ising machine

The Stanford team has built what's called an Ising machine, named for a mathematical model of magnetism. The machine acts like a reprogrammable network of artificial magnets where each magnet only points up or down and, like a real magnetic system, it is expected to tend toward operating at low energy.

The theory is that, if the connections among a network of magnets can be programmed to represent the problem at hand, once they settle on the optimal, low-energy directions they should face, the solution can be derived from their final state. In the case of the traveling salesman, each artificial magnet in the Ising machine represents the position of a city in a particular path.

Rather than using magnets on a grid, the Stanford team used a special kind of laser system, known as a degenerate optical parametric oscillator, that, when turned on, will represent an upward- or downward- pointing "spin." Pulses of the laser represent a city's position in a path the salesman could take. In an earlier version of this machine (published two years ago), the team members extracted a small portion of each pulse, delayed it and added a controlled amount of that portion to the subsequent pulses. In traveling salesman terms, this is how they program the machine with the connections and distances between the cities. The pulse-to-pulse couplings constitute the programming of the problem. Then the machine is turned on to try to find a solution, which can be obtained by measuring the final output phases of the pulses.

The problem in this previous approach was connecting large numbers of pulses in arbitrarily complex ways. It was doable but required an added controllable optical delay for each pulse, which was costly and difficult to implement.

### Scaling up

The latest Stanford Ising machine shows that a drastically more affordable and practical version could be made by replacing the controllable optical delays with a digital electronic circuit. The circuit emulates the optical connections among the pulses in order to program the problem and the laser system still solves it.

Nearly all of the materials used to make this machine are off-the-shelf elements that are already used for telecommunications. That, in combination with the simplicity of the programming, makes it easy to scale up. Stanford's machine is currently able to solve 100-variable problems with any arbitrary set of connections between variables, and it has been tested on thousands of scenarios.

A group at NTT in Japan that consulted with Stanford's team has also created an independent version of the machine; its study has been published alongside Stanford's by Science. For now, the Ising machine still falls short of beating the processing power of traditional digital computers when it comes to combinatorial optimization. But it is gaining ground fast and the researchers are looking forward to seeing what other work will be possible based on this breakthrough.

"I think it's an exciting avenue of exploration for finding alternative computers. It can get us closer to more efficient ways of tackling some of the most daunting computational problems we have," said Marandi. "So far, we've made a laser-based computer that can target some of these problems, and we have already shown some promising results."

Stanford University. (2016, October 21). New special-purpose computer may someday save us billions. *ScienceDaily*. Retrieved February 19, 2017 from [www.sciencedaily.com/releases/2016/10/161021121413.htm](http://www.sciencedaily.com/releases/2016/10/161021121413.htm)

# TEXT 2

## Internet and mobile devices prompt positive lifestyle changes

People are more likely to adopt heart healthy behaviors when guided and encouraged via the Internet, their cellphones or other devices, according to 23 years of research reviewed in *Journal of the American Heart Association*, the Open Access Journal of the American Heart Association/American Stroke Association.

"Both Internet-based and mobile-based programs can help people become more physically active, eat better and achieve modest weight loss over 3-12 months," said Ashkan Afshin, M.D., M.P.H., Sc.D., lead study author and acting assistant professor of global health at the Institute for Health Metrics and Evaluation at the University of Washington in Seattle.

Researchers reviewed 224 studies conducted on generally healthy adults, published between 1990 and 2013. The studies evaluated the effect of using Internet, mobile phones, personal sensors or stand- alone computer software tools to inspire behavioral changes, such as improving diet, increasing physical activity, losing weight and stopping/reducing tobacco or alcohol use.

Among the findings:

* Participants in Internet interventions improved their diets, became more active, lost body weight/fat, reduced tobacco use and cut excessive alcohol use.
* Participants in mobile device interventions (using smartphone apps or receiving text or voicemail messages) increased their physical activity and lost body weight/fat.

"Programs that have components such as goal-setting and self-monitoring and use multiple modes of communication with tailored messages tended to be more effective. We also found these programs were more effective if they included some interactions with healthcare providers.

Clinicians, in particular in primary care settings, can use such programs to help people improve their lifestyle behaviors and reduce the risk of chronic disease, such as cardiovascular disease and diabetes," Afshin said.

The available research is limited because most studies lasted less than six months, providing little information on how effective and sustainable the behavioral changes will be over the long term. In addition, most studies were conducted in high-income countries with volunteers who were generally more highly educated and motivated than the general public.

"Our study highlights several important gaps in current evidence on Internet-and mobile-based interventions. We need to evaluate their long-term value, effectiveness in different populations (such as the elderly and people from developing countries) and how different strategies may increase adherence to the programs," Afshin said.

American Heart Association. (2016, August 31). Internet and mobile devices prompt positive lifestyle changes. *ScienceDaily*. Retrieved February 19, 2017 from [www.sciencedaily.com/releases/2016/08/160831223729.htm](http://www.sciencedaily.com/releases/2016/08/160831223729.htm)

# TEXT 3

## Operating systems, application software and programming languages

### Operating system functions:



In any computer, the operating system:

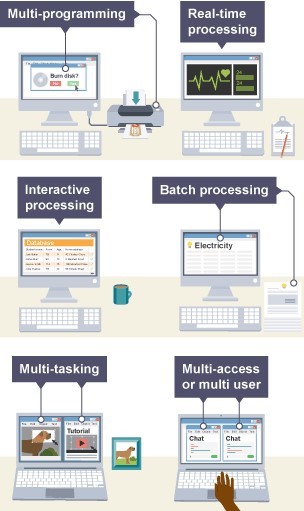
* Controls the **backing store** and **peripherals** such as scanners and printers.
* Deals with the transfer of programs in and out of memory.
* Organises the use of **memory** between programs.
* Organises **processing time** between programs and users.
* Maintains security and access rights of users.
* Deals with errors and user instructions.
* Allows the user to save files to a backing store.
* Provides the interface between the user and the computer - for example, **Windows Vista** and Apple **OSX**. For more information, see the **User Interfaces** study guide.
* Issues simple error messages.

In a larger computer such as a **mainframe** the operating system works on the same principles.

### Modes of operation

Computers can operate in many different ways requiring different and complex **operating systems.**

### Real-time processing



When the computer has to react within a guaranteed time to an **input**, a real-time operating system (RTOS) is used. For example, the engine management system within a car uses a real-time operating system in order to react to **feedback** from **sensors** placed throughout the engine.

A real-time operating system does not necessarily have to be fast. It simply has to be quick enough to respond to inputs in a predictable way. Embedded computers often contain an RTOS as many are used to control something.

Computers operating in real time are often dedicated to the control of systems such as industrial processes, planes and space flights.

### Multi-programming

Multi-programming is a method of operating such that several **programs** appear to be running at once.

The operating system switches jobs in and out of **processor** time according to priority. For example, while one job is being allocated printer time, another will be being processed in **memory**. The processor is so fast that it seems that many jobs are being processed at the same time.

### Batch processing

A batch processing system is where programs or data are collected together in a batch and processed in one go. Typically the processing of payrolls, electricity bills, invoices and daily transactions are dealt with this way.

This method of operation lends itself to jobs with similar inputs, processing and **outputs** where **no human intervention** is needed. Jobs are stored in a queue until the computer is ready to deal with them. Often batch processed jobs are done overnight.

### Interactive processing

An interactive processing system is where the tasks on the computer system require a continual exchange of information between the user and the computer system. It can be seen as the opposite of batch processing.

### Multi-tasking

This isn't just about running more than one **application** at the same time. Multi-tasking allows multiple tasks to run concurrently, taking turns using the resources of the computer.

This can mean running a couple of applications, sending a document to the printer and **downloading** a

### web page

**Multi-access or multi-user.** Modern personal computers can allow **multi-user access**. A multi-access (or multi-user) system is one where several users can use the same system together via a **LAN**.

The **CPU** deals with users in turn; clearly the more users, the slower the response time. Generally, however, the processor is so fast that the response time at the most is a fraction of a second and the user feels they are being dealt with immediately.

# TEXT 4

## Prove you've got the soft skills IT professionals need

All IT employers have a checklist of core competencies against which they assess candidates, and it's not just technical skills that must be up to the mark.

Some IT companies look for predictable skills such as knowledge of C++, JavaScript or .Net, but many others have more surprising requirements. Technology recruits have been known to look for creativity, the ability to be self-critical and the ability to help colleagues get their jobs done and enjoy their day.

### Developing soft skills for IT graduate jobs

Many IT graduate schemes call for soft skills and commercial awareness just as much – or more – than technical understanding, particularly for business-focused roles such as consulting. Technical graduates can find themselves up against arts or social science graduates for such roles and can sometimes miss out due to less well developed soft skills. If you need to build your confidence in giving presentations or teamwork, for example, consider taking an active role in a club or society where you can develop these.

Below is a round-up of key skills that are required for almost all IT graduate schemes.

### Communication

IT systems are only relevant in a business context so IT professionals need the ability to communicate well with people at all levels in an organisation, from help desk assistants and PC end users to company directors. It’s important to be able to listen and understand, as well as explain technology at an appropriate level for the audience. In client-focusing roles IT professionals must also communicate clearly with clients to understand and define system requirements.

Demonstrate your graduate communication skills by:

* Keeping verbal and written communication clear, concise and confident.
* Showing you understand your audience and can tailor your communication to them.
* Showing you can listen to and consider the views of others.
* Thinking before you speak.

### Planning and organisation

The IT sector is a project-focused industry. Good planning and organization skills are essential for graduates entering the tech business, in order to manage tasks on different projects with different deadlines and competing priorities. Effective planning makes it possible to anticipate problems and challenges and transform them into positive opportunities.

Demonstrate your graduate planning and organization skills by:

* Showing that you can put structure to a task or project.
* Highlighting how you scope out an activity and allocate time to individual tasks.
* Showing how you anticipate challenges and issues that could arise and plan contingencies.

### Drive, motivation and enthusiasm

Drive and motivation are essential for working in this incredibly fast-paced industry. You need to enjoy taking on new challenges, pushing boundaries and looking towards the future. Graduate recruiters warm to enthusiastic candidates because they know that enthusiastic people are motivated people.

Demonstrate your drive, motivation and enthusiasm by:

* + Showing you have the determination to achieve an end result.
  + Demonstrating that you can keep your optimism and enthusiasm even when things get tough.
  + Showing that you can bounce back from set backs.
  + Knowing what makes yourself tick and what types of task and activity you most enjoy doing.

### Problem-solving

Working in IT you need to have the ability to define problems in a timely manner, identify the root causes, and then gather relevant information to find appropriate solutions. But problem-solving goes beyond resolving just technical issues. You may also need to suggest enhancements to existing procedures and processes to deliver improved service, a better product and most importantly, satisfied clients.

Demonstrate your graduate problem-solving skills by:

* Displaying that you can take a logical and analytical approach to problem solving.
* Showing that you can view problems from a number of angles.
* Demonstrating that you can anticipate potential pitfalls and act to prevent them happening.

### Teamwork

Teamwork is essential for sharing knowledge, establishing and building relationships and supporting all the people involved on a project. Teamwork requires interpersonal skills and at times, leadership qualities so that you can consider and respond appropriately to the behavior and motives of others, adapt your personal style accordingly, or step out in front to bring others with you.

Demonstrate your graduate teamwork skills by:

* + Showing that you can build and maintain positive working relationships.
  + Demonstrating how you share information with others; support others and show respect for alternative views.
  + Showing how you have contributed to keeping projects on track and to achieving a final goal, working sensitively and co-operatively with others.
  + Showing how you have considered and identified what motivates others and how you have led by example.

Alex TARGET jobs. (2012, July 16). Prove you’ve got the soft skills IT professionals need. Retrieved February 19, 2017, from https://targetjobs.co.uk/career-sectors/it-and-technology/advice/285645- prove-youve-got-the-soft-skills-it-professionals-need

INGLÉS IV

# TEXT 1

## Ten tips on writing a successful CV



Katy Cowan gives her top tips on creating a memorable and readable CV. *Photograph: Max Oppenheim/Getty Images*

When it comes to applying for a new job, your CV could be just the ticket to get you that initial foot in the door and secure an interview – but how do you ensure your CV is added to the interview pile rather than thrown straight in the bin?

Putting together a successful CV is easy once you know how. It's a case of taking all your skills and experience and tailoring them to the job you're applying for. But what if you don't meet the right criteria? Well, I've put together the following tips to help you get started in creating a successful CV and securing your first (or next) arts job.

### Get the basics right

There is no right or wrong way to write a CV but there are some common sections you should cover. These include: personal and contact information; education and qualifications; work history and/or experience; relevant skills to the job in question; own interests, achievements or hobbies; and some references.

### Presentation is key

A successful CV is always carefully and clearly presented, and printed on clean, crisp white paper. The layout should always be clean and well-structured and CVs should never be crumpled or folded, so use an A4 envelope to post your applications.

Always remember the CV hotspot – the upper middle area of the first page is where the recruiter's eye will naturally fall, so make sure you include your most important information there.

### Stick to no more than two pages of A4

A good CV is clear, concise and makes every point necessary without waffling. You don't need pages and pages of paper – you just keep things short and sweet. A CV is a reassurance to a potential employer, it's a chance to tick the right boxes. And if everything is satisfied, there's a better chance of a job interview. Also, employers receive dozens of CVs all the time so it's unlikely they'll read each one cover to cover. Most will make a judgment about a CV within sections, so stick to a maximum of two pages of A4 paper.

### Understand the job description

The clues are in the job application, so read the details from start to finish. Take notes and create bullet points, highlighting everything you can satisfy and all the bits you can't. With the areas where you're lacking, fill in the blanks by adapting the skills you do have. For example, if the job in question requires someone with sales experience, there's nothing stopping you from using any retail work you've undertaken – even if it was something to help pay the bills through university. It will demonstrate the skills you do have and show how they're transferable.

### Tailor the CV to the role

When you've established what the job entails and how you can match each requirement, create a CV specifically for that role. Remember, there is no such thing as a generic CV. Every CV you send to a potential employee should be tailored to that role so don't be lazy and hope that a general CV will work because it won't.

Create a unique CV for every job you apply for. You don't have to re-write the whole thing, just adapt the details so they're relevant.

### Making the most of skills

Under the skills section of your CV don't forget to mention key skills that can help you to stand out from the crowd. These could include: communication skills; computer skills; team working; problem solving or even speaking a foreign language. Skills can come out of the most unlikely places, so really think about what you've done to grow your own skills, even if you take examples from being in a local sports team or joining a voluntary group – it's all relevant.

### Making the most of interests

Under interests, highlight the things that show off skills you've gained and employers look for. Describe any examples of positions of responsibility, working in a team or anything that shows you can use your own initiative. For example, if you ran your university's newspaper or if you started a weekend league football team that became a success.

Include anything that shows how diverse, interested and skilled you are. Don't include passive interests like watching TV, solitary hobbies that can be perceived as you lacking in people skills. Make yourself sound really interesting.

### Making the most of experience

Use assertive and positive language under the work history and experience sections, such as "developed", "organized" or "achieved". Try to relate the skills you have learned to the job role you're applying for. For example: "The work experience involved working in a team," or "This position involved planning, organization and leadership as I was responsible for a team of people".

Really get to grips with the valuable skills and experience you have gained from past work positions, even if it was just working in a restaurant – every little helps.

### Including references

References should be from someone who has employed you in the past and can vouch for your skills and experience. If you've never worked before you're OK to use a teacher or tutor as a referee. Try to include two if you can.

### Keep your CV updated

It's crucial to review your CV on a regular basis and add any new skills or experience that's missing. For example, if you've just done some volunteering or worked on a new project, make sure they're on there – potential employers are always impressed with candidates who go the extra mile to boost their own skills and experience.

*This content was originally published by Creative Boom.* Katy Cowan (2012). 10 tips on writing a successful CV. Retrieved March, 15th, 2012, from: https://www.theguardian.com/culture-professionals-network/culture-professionals- blog/2012/mar/15/cv-tips-first-arts-job

Give advice to your partner before a job interview. Use should/shouldn´t. Draw ideas from your own experience.

Now you are ready to read text number 2. Are there any coincidences? Expand.

# TEXT 2

## Six steps to a better job interview

By Peter Bowes. BBC News, Los Angeles

Dress appropriately, be on time and don't lie: three of the key steps for a successful job interview

In today's world of social networks a face-to-face interview can seem outdated, but online resources can help you ace the interview and land the job, especially if mixed with some old-fashioned common- sense advice.

### "On time is 15 minutes early"

Interview day is not the day to sleep in and miss the train.

"You never should be late for an interview," says Lauren Ferarra, a recruiter with Creative Circle, a US staffing agency in New York.

"On time is 15 minutes early. If you're more than 15 minutes early, you're going to be waiting around a while and it comes off a little sketchy. So 15 minutes early, non-negotiable, you should be in the building ready to go."

### "This is not the time to wing it"

Try to anticipate the questions by re-reading the job description and seeing what questions they might prompt.

"To do a good job you really need to know who you're talking to," says Kristy Stromberg, of the online jobs listing site SimplyHired.com.

"Do your research on the company and the person who is interviewing you. This is not the time to wing it. You're not gambling, you're selling."

Candidates should rehearse succinct answers to questions such as "Tell me about yourself" and "What are your goals?" - the responses should be relevant to the position on offer.

"You will be asked questions about your experience. Anticipate what the company is looking for. Who do they want to hire and what types of problems are they trying to solve?"

### "People really underestimate smiling"

First impressions are vital to making a lasting impact on an interviewer. Being personable and friendly speaks volumes.

"I think the handshake and the eye contact are incredibly important and a smile," says Ms Ferarra.

"People really underestimate smiling and having that personality. You tend to be so nervous and tight in an interview, and you really want to come off and show that you are someone they want to work with."

### Nerve control

Even the best-prepared candidate can feel the jitters on interview day. Michael Weiss, a public speaking coach, says it is important that people focus on their voice to avoid sounding nervous.

"You can have a lot of adrenalin running through your body and that's when you get the wavering voice. Practise questions out loud. Do some breathing exercises, calm down and just focus," he says.

Dealing with a prickly interviewer can also be unnerving.

"You need to read the personality of the person that you are interviewing with. If they're very staid and very buttoned-up, you probably want to be a little succinct and short with your answers and mirror their personality."

As the process gets under way, the jobseeker should allow the interviewer to lead the conversation. But it should be a two-way process, says Ms Ferarra.

"Don't be afraid to jump in and ask questions as the conversation is flowing. Don't feel you need to save them all to the end."

### Don't lie

"In today's world of LinkedIn and other social networks, it's very easy for someone to do a back- channel reference," says Ms. Stromberg.

"That is, speak to people they know through a common network to check out your story. They can consult people that you have not offered up as a reference to see if you really do what you said you did. You want to make sure that story and your message is consistent."

### Say "thank you"

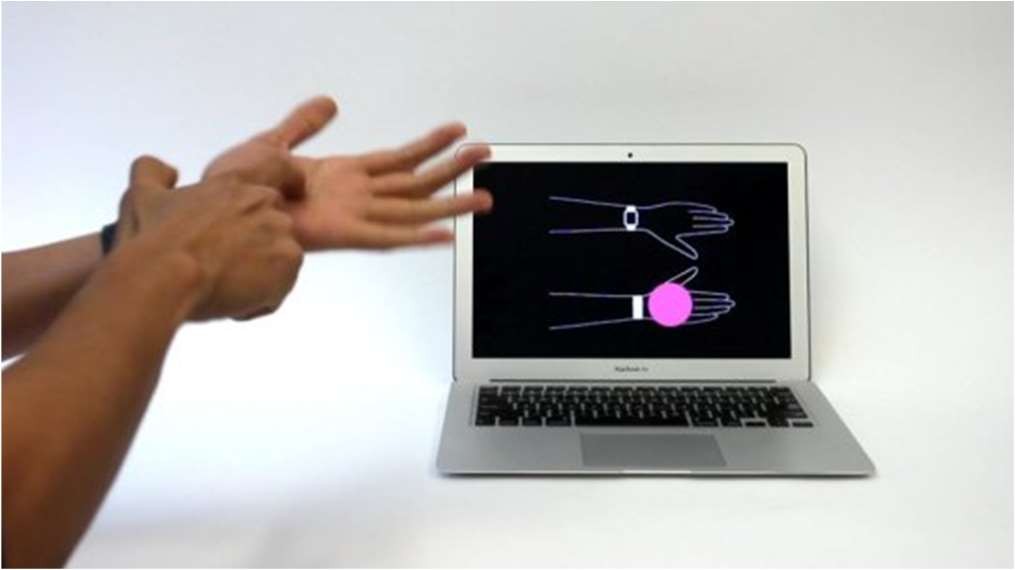
Once it is all over, the only thing left to do is send an email or written note to the interviewer. According to Ms. Ferarra, it is hugely important to leave a good impression.

"Make sure you get that person's card. Follow up with an email, a thank-you, and they'll remember that in the long run."

Peter Bowes (2013). Six steps to a better job interview. Retrieved December, 10th, 2013, from: [www.bbc.com/news/business-25191591.](http://www.bbc.com/news/business-25191591)

# TEXT 3

## Repurposed sensor enables smartwatch to detect finger taps and other bio-acoustic signals



Carnegie Mellon University researchers have developed technology to enable smartwatches to detect taps, scratches and flicks against the wearer's body, making possible new types of interactions with wearable devices. *Credit: CMU Future Interfaces Group*

A smartwatch is capable of detecting and distinguishing a variety of taps, flicks and scratches by the hands and fingers, and all that's required is a software upgrade that repurposes the device's existing accelerometer, Carnegie Mellon University researchers discovered.

This new functionality makes possible new applications that use common gestures to control the smartwatch and, ultimately, other objects connected through the internet of things. By monitoring vibrations that occur when people hold objects or use tools, the smartwatch also would be capable of recognizing objects and activities.

It could even be used to help tune a guitar, with the smartwatch displaying the note transmitted as the guitarist plucks and adjusts each string.

"It's as if you're using your hand as a detection device," said Gierad Laput, a Ph.D. student in the Human-Computer Interaction Institute (HCII), suggesting totally new uses for smartwatches. "The hand is what people use to interact with the world."

This new technology, dubbed ViBand, was developed by Laput and Robert Xiao, both Ph.D. students in the HCII's Future Interfaces Group, along with their adviser Chris Harrison, assistant professor of human-computer interaction. They will present a paper describing the work at the Association for Computing Machinery's User Interface Software and Technology (ACM UIST) Symposium this week in Tokyo.

Normally, a smartwatch accelerometer is used to detect when a person lifts an arm so the screen can activate, or sometimes to count footsteps. To do so, the accelerometer only needs to take measurements about 100 times a second. But when researchers increased the sampling frequency to 4,000 a second, 4 kHz, they found it acted like a vibrational microphone. Rather than detecting sounds transmitted through the air, however, it couples with the body to detect bio-acoustic signals.

"ViBand isn't just a way to control your smartwatch," Harrison said. "It enables you to augment your arm. It's a powerful interface that's always available to you."

A ViBand-enabled watch can tell if someone is tapping on the forearm, the palm of the hand or the back of the hand. It can detect finger flicks, scratches and other motions. It also can sense if a person is holding various mechanical and electrical tools, such as an electric toothbrush, power drill or handsaw. Each body tap, device or activity has distinctive bio-acoustic signals.

To increase the frequency of the accelerometer's sampling rate, the research team developed a custom kernel -- the core of the smartwatch's operating system. That's the only modification required and can be performed as a software update, Laput said.

The team developed several demonstration apps for ViBand, including the use of hand gestures in the area around the watch to control apps on the watch. Similar gestures could be used to control remote devices, such as lights or a TV or other appliances connected via the internet of things.

They also showed it could be used for object-aware apps, such as monitoring meal preparations or providing visual feedback while tuning an acoustic guitar.

Finally, they propose an application using what they call a vibro-tag, which is a small object that emits inaudible, structured vibrations that contain data. A vibro-tag on a person's office door, for instance, might transmit information about office hours or alternative contact information.

Carnegie Mellon University. (2016, October 17). Repurposed sensor enables smartwatch to detect finger taps and other bio-acoustic signals. ScienceDaily. Retrieved February 18, 2017 from [www.sciencedaily.com/releases/2016/10/161017111241.htm](http://www.sciencedaily.com/releases/2016/10/161017111241.htm)

# TEXT 4

## How to deal with job application rejection

By Peter Bowes. BBC News, Los Angeles

Rejection can be a chance to hone your approach to job hunting

Technology has made firing off multiple job applications easier - but as well as more opportunities for success, there is also more chance of rejection.

We wanted to know how experts suggest we turn rejection around so that it helps a job search be successful in the long run.

"Don't take rejection personally," says Los Angeles-based business coach Joanna Garzilli.

"Often there are a number of factors at play including timing, circumstances, office politics and budgets. Just because someone says no today doesn't mean it's a no in the future."

And About.com job-search expert Alison Doyle says: "The best way to deal with rejection is to consider why you were rejected, and then move on."

### Feedback

But analyzing rejection is easier said than done. It may be tempting to follow up a rejection email or letter by asking an employer how they reached their decision, but you won't always get a response.

"Many employers won't disclose any information to applicants they rejected, because they are concerned about legal issues like discrimination," says Ms Doyle.

"That said, it can't hurt to ask, and if you do get feedback, consider how you can use it enhance your chances in the future."

If you can't get feedback, you should spend some time asking yourself what might have gone wrong.

Ms. Garzilli says: "Do a self-evaluation on what went well, what didn't and why? This will help you to be well prepared for the next job interview."

### Re-focus

In the relatively anonymous world of online job searching, where the number of applications and rejections can mount up very quickly, it it easy to lose focus on the ultimate goal.

Ms. Doyle says: "Do consider how effective your job search is - or isn't.

"Are you applying for the right jobs? Jobs that are a strong match for your qualifications? If not, you are wasting time because there are so many applicants for each position, only the most qualified candidates will be considered."

### 'Disappointing, disillusioning and discouraging'

Since May, Sheri Bennett, from California, has applied for more than 200 jobs online, but she is still looking for work.

"I have not had many call-backs at all, and a lot of the companies don't even send a courtesy email that you've not been selected," she says.

"Not even an acknowledgment, not even a thank you for applying. Nothing." The former teacher says it can be very "disappointing" and "disillusioning."

### Emotional toll

Ms. Bennett, who says she is "discouraged" at times, responds by simply "trying harder."

Dan Sparks, vice-president of sales at Hire Live, which stages career fairs, says: "There are very qualified candidates out there and sometimes it just takes a little time to find that right position. says .

"Don't just talk to one company and say, 'That was it, that's all I need to do, I already got that job.' Keep an open mind, don't be disappointed if they say no or don't be disappointed if they move forward with somebody else."

Being out of work for a prolonged period takes its toll emotionally. Relationships suffer, and unsuccessful candidates can find themselves on a downwards spiral into depression.

Ms. Doyle says: "One way many job seekers have dealt with lethargy or depression is to not focus all their time and energy on job seeking.

"Spending time volunteering, for example, will help you feel better about yourself. It may also help you make valuable contacts who can help your job search."

Peter Bowes (2013). How to deal with job application rejection. Retrieved December, 17th, 2013, from: [www.bbc.com/news/business-25218012.](http://www.bbc.com/news/business-25218012)