HCI ASSIGNMENT#1

Assignment: Sense of Taste & Smell Related Computer Science Innovations/ 5 Good & 5 Bad Visual Designs

Submitted By:

Hassan Anwar BSEF12M014

Submitted to:

Ma'am Muddassira Arshad

Punjab University College of Information Technology
University of the Punjab, Lahore.

Taste related Computer Science Innovations:

Digital taste buds will help you to eat smarter. What if we could make healthy foods taste delicious using a different kind of computing system that is built for creativity?

The computer will be able to use algorithms to determine the precise chemical structure of food and why people like certain tastes. These algorithms will examine how chemicals interact with each other, the molecular complexity of flavor compounds and their bonding structure, and use that information, together with models of perception to predict the taste appeal of flavors.

Not only will it make healthy foods more palatable, it will also surprise us with unusual pairings of foods actually designed to maximize our experience of taste and flavor. In the case of people with special dietary needs such as individuals with diabetes, it would develop flavors and recipes to keep their blood sugar regulated, but satisfy their sweet tooth. Following is one of such recent innovation in this regard:-

Simulator to recreate Virtual Taste Online:

Dr Nimesha Ranasinghe, Researcher at the Center who headed the project, the digital device can recreate the taste of virtual food and drinks by non-invasive electrical and thermal stimulation of the tongue. This generates signals transmitted through a silver electrode touching the tip of the tongue to produce salty, sweet, sour and bitter sensations. By combining different levels of electrical currents and varying the temperature of the electrode, simulation of the tastes can be reproduced.

From experiments, sour, salty and bitter sensations were reported from electrical stimulation, while minty, spicy and sweet sensations were reported through thermal stimulation. The latter group represented minor sensations, requiring further work to intensify the tastes. The researchers qualified that the surveys were dependent on the responses of the subjects, which varied for different individuals.

This work has three novel aspects, said Dr Ranasinghe: the studying of the electronic simulation and control of taste sensations achievable through the Digital Taste Interface against the properties of current and change in temperature; the method of actuating taste sensations by electrical and thermal stimulation methods, either individually or in combination; and the aim of introducing a practical solution to implement virtual taste interactions in interactive computing systems.

Dr Ranasinghe started his project as a graduate student at the NUS Department of Electrical and Computer Engineering, under the supervision of Professor Ryohei Nakatsu, Associate Professor Adrian David Cheok, Professor Lawrence Wong Wai Choong, and Department of Anatomy Professor Ponnampalam Gopalakrishnakone. He furthered the work upon joining the CUTE Center and led the research team to develop taste-over-Internet protocol for taste messaging, a data format that facilitates the delivery of information on recreating the different tastes via the electrode.

Dr Ranasinghe said that a new reward system based on taste sensations in a gaming environment could be an early adopter of the simulator. As an illustration, if a gamer completes a task or level successfully, a sweet or minty dose will be rewarded. However, failure is delivered with a bitter taste.

The simulator could have healthcare applications. For instance, diabetics could use the device for a taste of sweetness without affecting their blood sugar levels. Cancer patients may be able to improve their dulled sense of taste during chemotherapy with the electrode.

However, the four major tastes form only part of the flavour equation. Smell and texture play key roles, which the researchers want to add on for the full tasting experience.

Smell related Computer Science Innovations:

During the next five years, tiny sensors embedded in your computer or cell phone will detect if you're coming down with a cold or other illness. By analyzing odors, biomarkers and thousands of molecules in someone's breath, doctors will have help diagnosing and monitoring the onset of ailments such as liver and kidney disorders, asthma, diabetes and epilepsy by detecting which odors are normal and which are not.

Due to advances in sensor and communication technologies in combination with deep learning systems, sensors can measure data in places never thought possible. For example, computer systems can be used in agriculture to "smell" or analyze the soil condition of crops. In urban environments, this technology will be used to monitor issues with refuge, sanitation and pollution – helping city agencies spot potential problems before they get out of hand.

Meta Cookie:

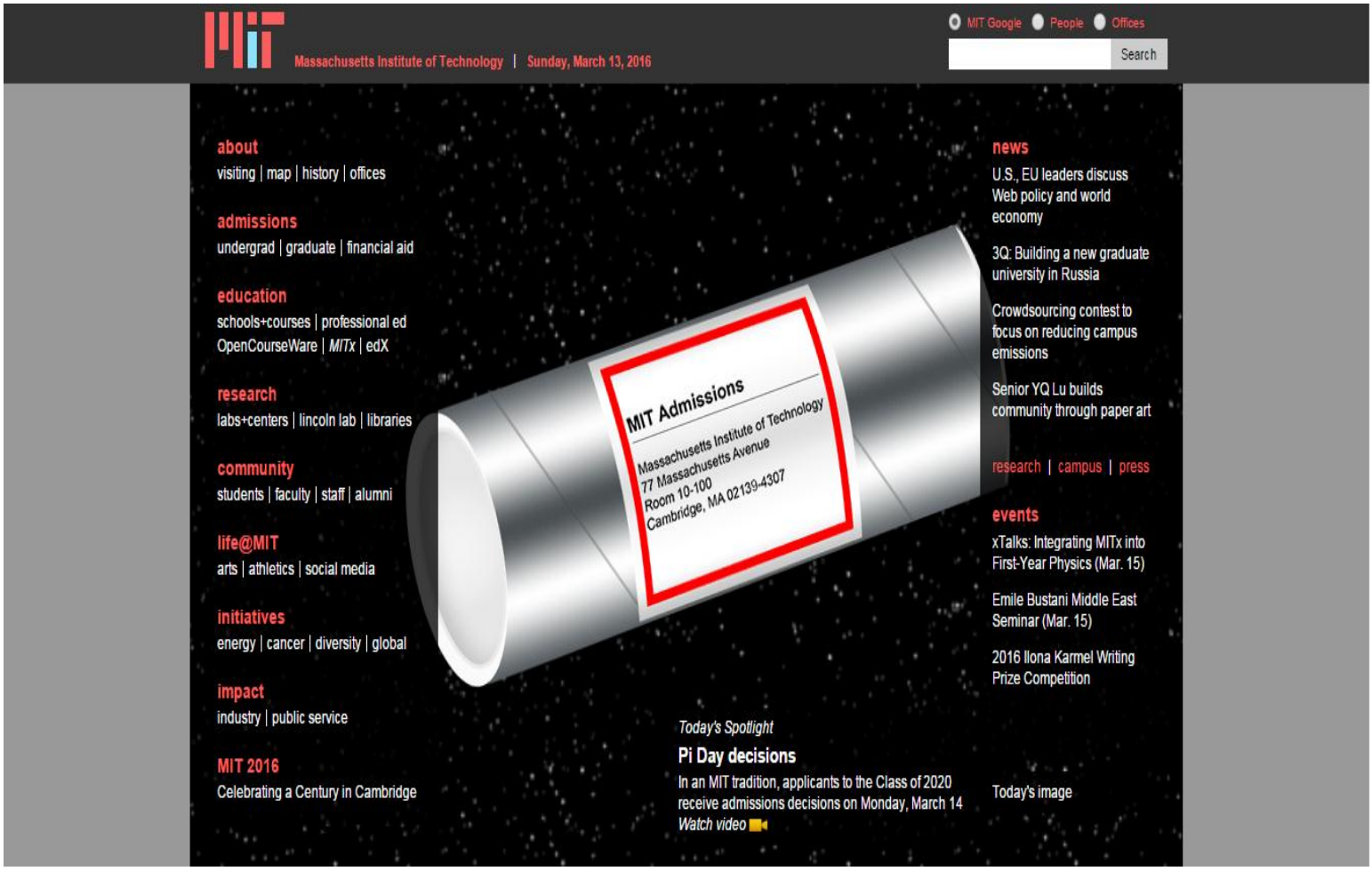
Meta Cookie is an experimental "pseudo-gustatory display" that attempts to modify the perception of flavor by changing the food item's appearance and masking its true smell with another, simulated scent. It's a truly bizarre set of headgear that combines augmented reality with a series of tubes for emitting smells in front of the user's nose.

The Smellophone:

In June, the Parisian design center Le Laboratories, founded and directed by Harvard's Professor of the Practice of Idea Translation, David A Edwards, announced the imminent release of its oPhone DUO. Le Laboratories claims that the system will ultimately be able to release 300,000 unique aromas. This device is essentially a sophisticated smell modem, with the capacity to blend multiple odors. While far more complex than the Scentee, which can only deliver one smell at a time, the Duo looks less like a mobile phone than something we might see on a dental hygienists tray, and will not be available until the spring of 2015.

5 Good Visual Designs:

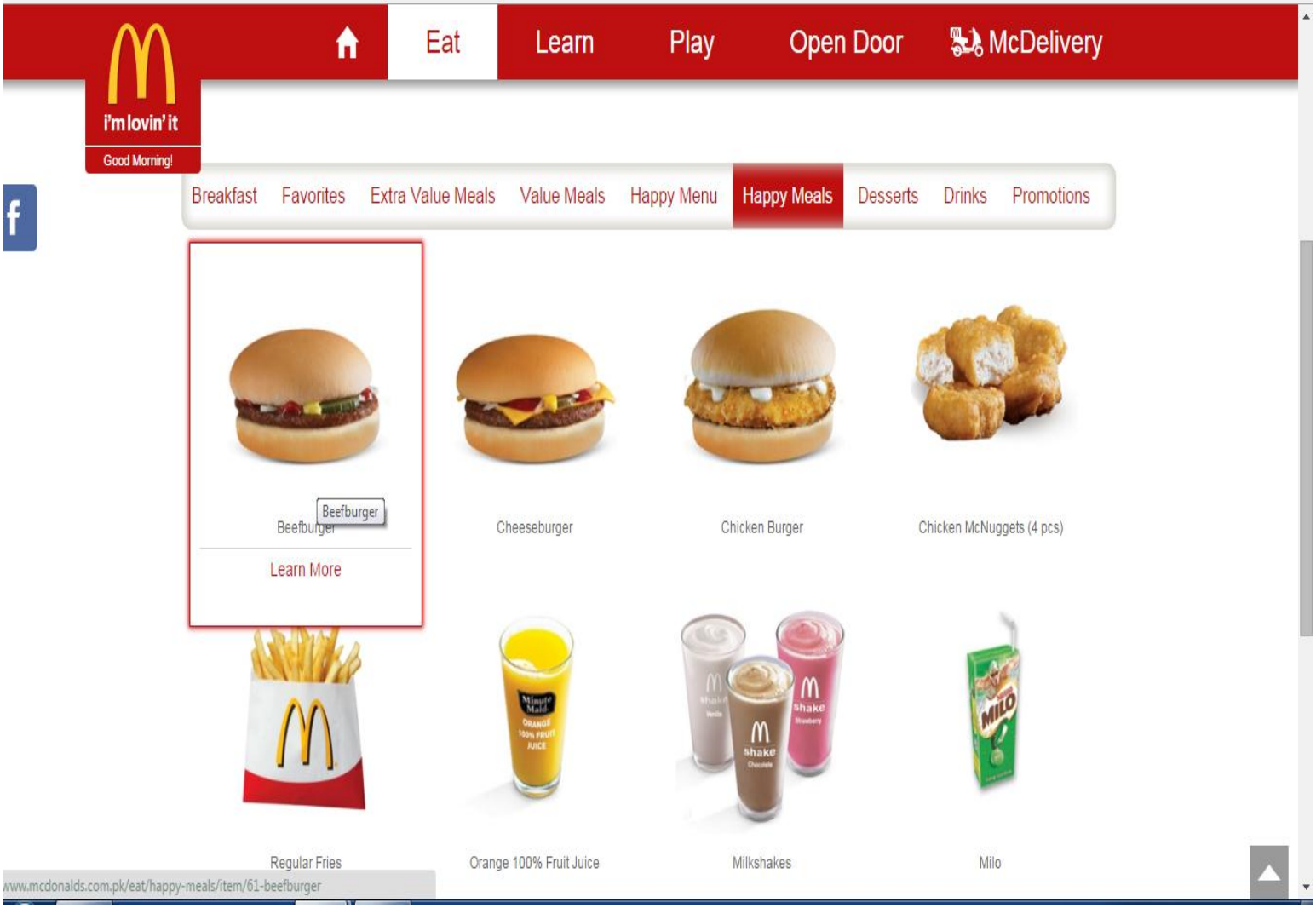
Visual Design#1:



Reasons:

- One page website.
- Access to all contents of the website.
- Black background with red and white foreground text reduces eye strain.
- Good for Mobile view.
- No need of scrolling.
- Consumes less power due to black background.

Visual Design#2:



Reasons:

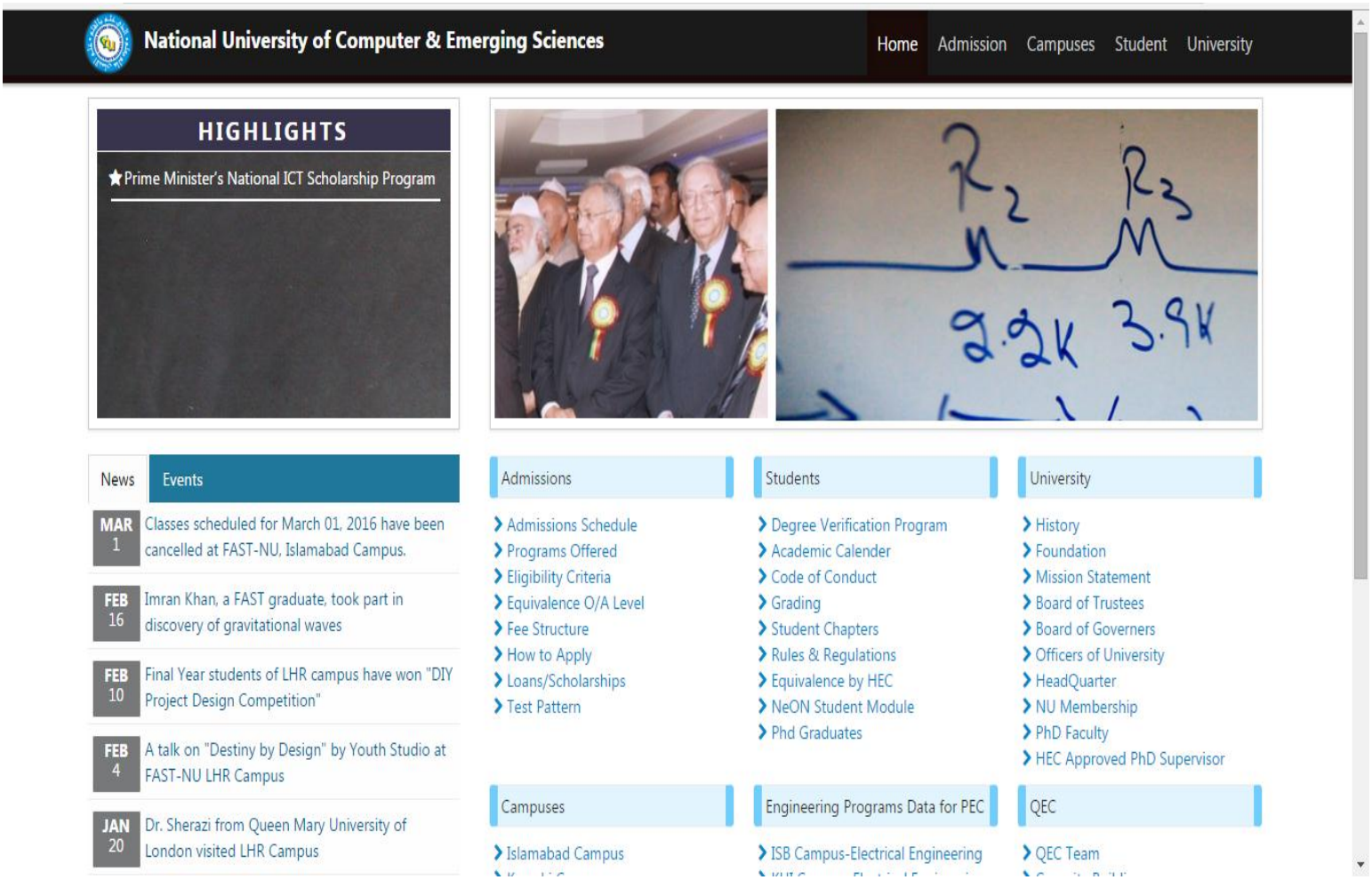
- Neat website with white background.
- Access to all contents of the website via top navigation bars.
- All products are shown in a proper aligned grid.
- Product details button is also in access with the product.

Visual Design#3:

Reasons:

- Neat website with white background.
- Access to all contents of the website via top navigation bars.
- All relevant details are shown in a proper aligned grid.
- Interactive UI designs.

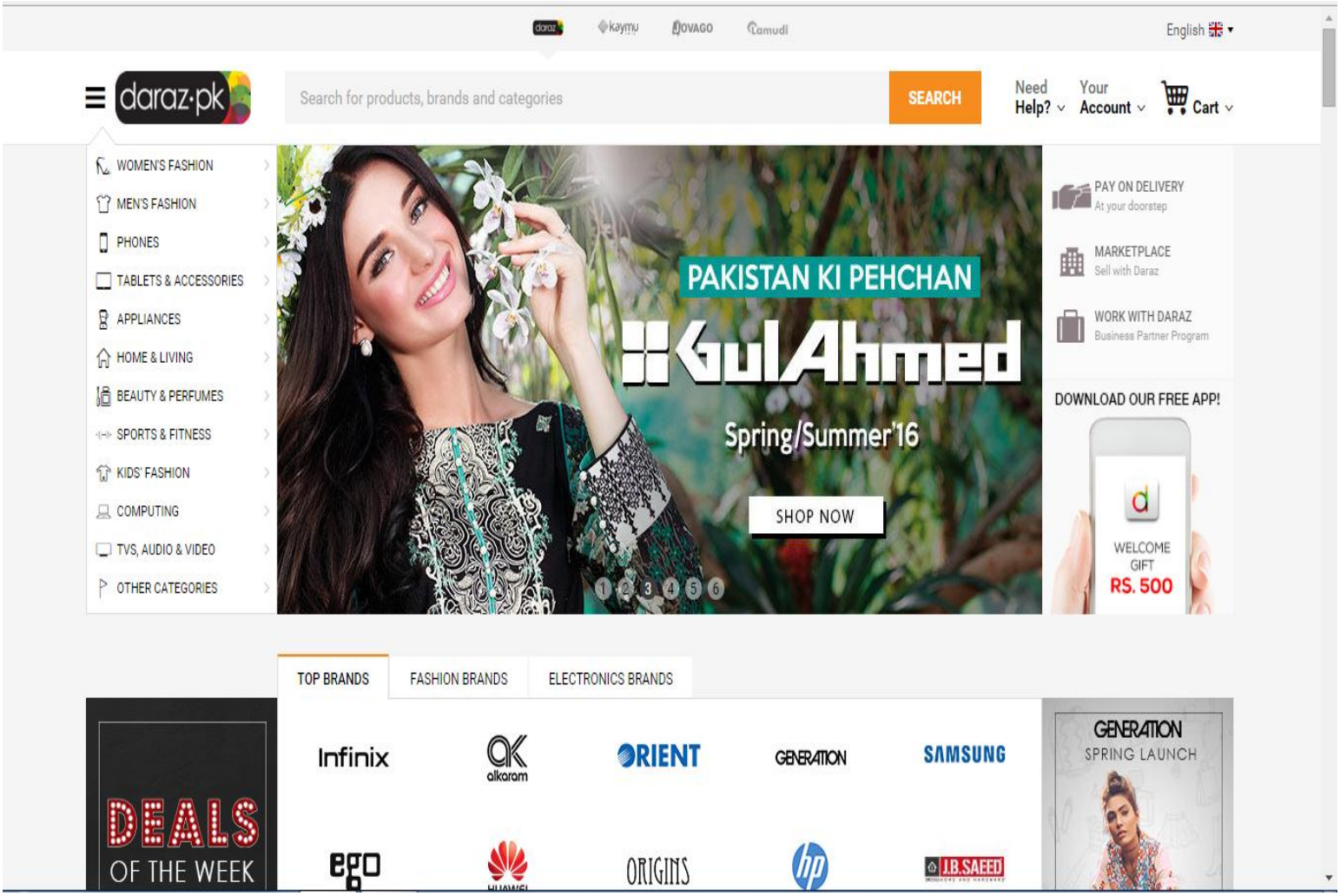
Visual Design#4:



Reasons:

- Neat website with white background.
- Access to all contents of the website via top navigation bars.
- Side bars for running news.
- Simple and neat design for users.
- Light weight website with less sliders, images and animations.

Visual Design#5:



Reasons:

- Neat website with grey white background.
- Access to all contents of the website via side navigation bars.
- All products are shown in a proper aligned grid.
- Product details button is also in access with the product.

5 Bad Visual Designs:

Visual Design#1:

Reasons:

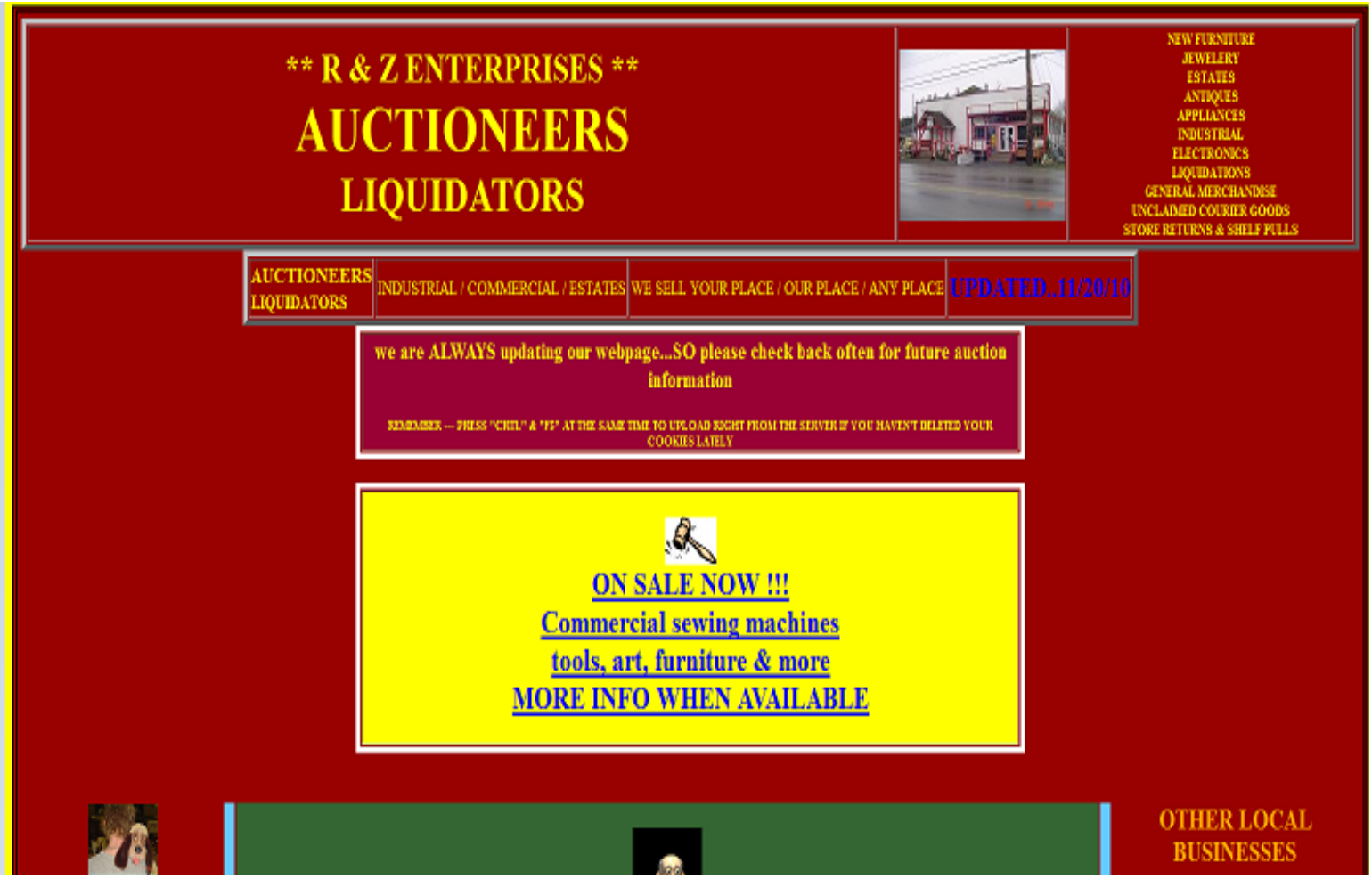
- No proper alignment of grid.
- No use of good graphics.
- Small font size makes readability difficult.
- Too much content on one page.
- Missing navigation bars.

Visual Design#2:

Reasons:

- Imaged background with no use of good graphic design.
- Foreground text not visible and unable to read.
- Small font size makes it more pathetic.
- No access to vital information related to the website.
- Missing navigation bars.

Visual Design#3:



Reasons:

- No proper navigation bars.
- No use of good graphics.
- Small font size makes readability difficult.
- Poor color selection for background an foreground.

Visual Design#4:

Reasons:

- No use of good graphics.
- Small font size makes readability difficult.
- Too much content on one page.

Visual Design#5:

Reasons:

- No proper aligned navigation bars.
- Poor use of graphics.
- Poor color selection for background and foreground.
- Readability is difficult.