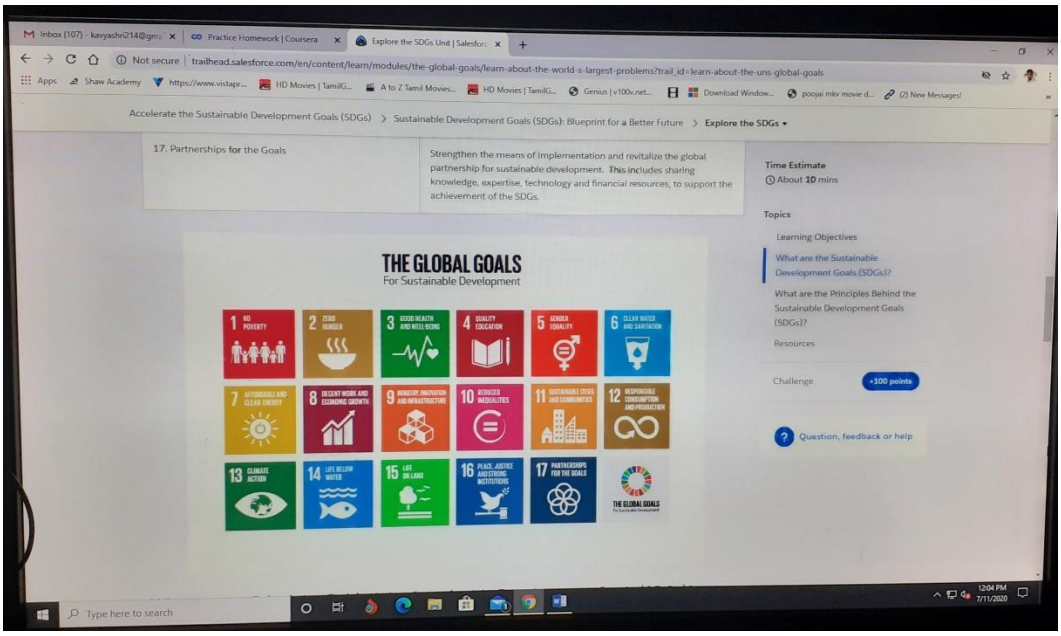
DAILY ASSESSMENT

Date:	**11-7-2020**	**Name:**	**Kavyashree m**
Course:	**salesforce**	**USN:**	**4al15ec036**
Topic:	**Accelerate the Sustainable Development Goals (SDGs)**	**Semester & Section:**	**8th A**
Github Repository:	**kavya**		

FORENOON SESSION DETAILS



What are the Sustainable Development Goals (SDGs)?

In 2015, the United Nations General Assembly put forth 17 Sustainable Development Goals (SDGs), also known as the Global Goals, designed to call attention to and address the extreme poverty, growing inequality, and changing climate that affect communities throughout the world.

What are the Principles Behind the Sustainable Development Goals (SDGs)?

The SDGs are designed to be universal, integrated, and inclusive.

1. Universal: Eradicating extreme poverty and building a sustainable future are challenges all countries face.
2. Integrated: The SDGs integrate all three dimensions of sustainable development (economic, social, and environmental) with an underlying consideration for people, planet, peace, prosperity, and partnership.
3. Inclusive: The SDGs pledge to leave no one behind, meaning that no goal is met unless it's met for everyone. That means putting the needs and interests of the furthest behind first.

What Problems Are the SDGs Trying to Solve?

Imagine you woke up one morning and discovered that all the world's leaders had assembled to ask you yes you how to solve all the largest problems in the world. Where would you start?the SDG Goals wheel encircled by icons to reflect nature of the SDGs. Unemployment, poverty, inequality, education, hunger, climate change; these represent just a subset of the problems that face us today. To make things more complicated, many of these issues are interrelated. There is an undeniable relationship between health and access to clean water. Education is critical for making strides towards gender equality. And so on. We can't address these issues in isolation. We must work together to solve them. The Sustainable Development Goals address these problems and their interlinkages, and highlight the need for greater partnerships.

It can feel impossible to take stock of it all. Thankfully, the work of categorizing the problems of the world has already been done by an organization devoted to solving them the UN. The SDGs are a blueprint for a better future, and for a more sustainable world.

The SDGs provide the framework for action. Most importantly, they give us clear, measurable and defined targets (169 of them to be exact) and indicators (232) that we all, regardless of sector, need to work towards.The SDGs are the world's to-do list.

What Is Sustainable Development?

Sustainable development meets the needs of the present without compromising the needs of future generations. The idea of sustainable development is multidimensional, and tackles the interdependencies among the SDGs with the goal of transforming our world for the better.

The 2030 Agenda for Sustainable Development is the basis of the SDGs and represents a shared global vision. The five dimensions of the 2030 Agenda Prosperity, People, Planet, Peace, and Partnerships (The 5 P's) articulate the scope of this vision. This is an ambitious, systems-level approach to solve extreme global poverty, inequality, and climate change by 2030. At its heart is the principle of leaving no one behind.The good news is that we are seeing more and more cross-sector action around the SDGs. People are becoming more aware of them and organizing around them. For example, there is fast-growing momentum on climate action among corporations, as well as in other sectors.

Salesforce and the SDGs

Salesforce is committed to improving the state of the world. We understand that critical challenges like climate change, poverty, conflict, and inequality require businesses, governments, and the social sector to innovate together. Our purpose is strongly aligned with the Sustainable Development Goals and we are committed to leveraging our data and technology to help changemakers meet the 2030 Agenda.

At Salesforce we strive for “Responsible Trailblazing,” which includes taking action to accelerate progress toward the SDGs. In the Resources section at the end of this unit, you’ll find the Salesforce Stakeholder Impact Report and The Salesforce.org Social Impact Report, both of which highlight our work to support the SDGs.

Salesforce addresses all of the SDGs through a combination of our Technology for Social Change portfolio, our philanthropy, our equality and sustainability initiatives, and our work in communities.

Our Technology for Social Change Portfolio

Salesforce.org’s Technology for Social Change portfolio provides nonprofits and educational institutions with access to Constituent Relationship Management (CRM) technology, and empowers those organizations to use CRM technology through training and community building. Targeted proliferation of technological solutions helps others build the capacity to advance every SDG.

Our Philanthropy

Salesforce.org, the dedicated global impact team at Salesforce, invests in creating and supporting an inclusive and diverse workforce of future-ready leaders who have the skills

to thrive in the 21st century. Salesforce.org has addressed SDG 4 by giving over $97 million in education grants, and has addressed SDG 8 by giving over $18 million in workforce development grants. Salesforce.org has specifically made contributions of more than $298 million in support of the SDGs through other philanthropic grants.

Our Equality and Sustainability Initiatives

In terms of Equality and SDG 5, Salesforce has now spent a total of $10.3 million to ensure that our employees men and women receive equal pay for equal work.

When it comes to environmental sustainability, Salesforce's dedicated sustainability program addresses:

- **SDG 6:** Clean Water and Sanitation
- **SDG 7:** Affordable and Clean Energy
- **SDG 11:** Sustainable Cities and Communities
- **SDG 12:** Responsible Consumption and Production
- **SDG 13:** Climate Action
- **SDG 14:** Life Below Water
- **SDG 15:** Life on Land

How You Can Accelerate Progress on the SDGs

The SDGs are a call for the public, private, and social sectors to come together. Can the effort of one person make a difference? You bet it can! You've already started by familiarizing yourself with the Global Goals for Sustainable Development and the history behind them. If you're ready for the next step, see our guide to Responsible Trailblazing in the Resources section at the end of this unit. The guide is meant to provide you with ideas and inspiration.

the 17 SDGs or Global Goals

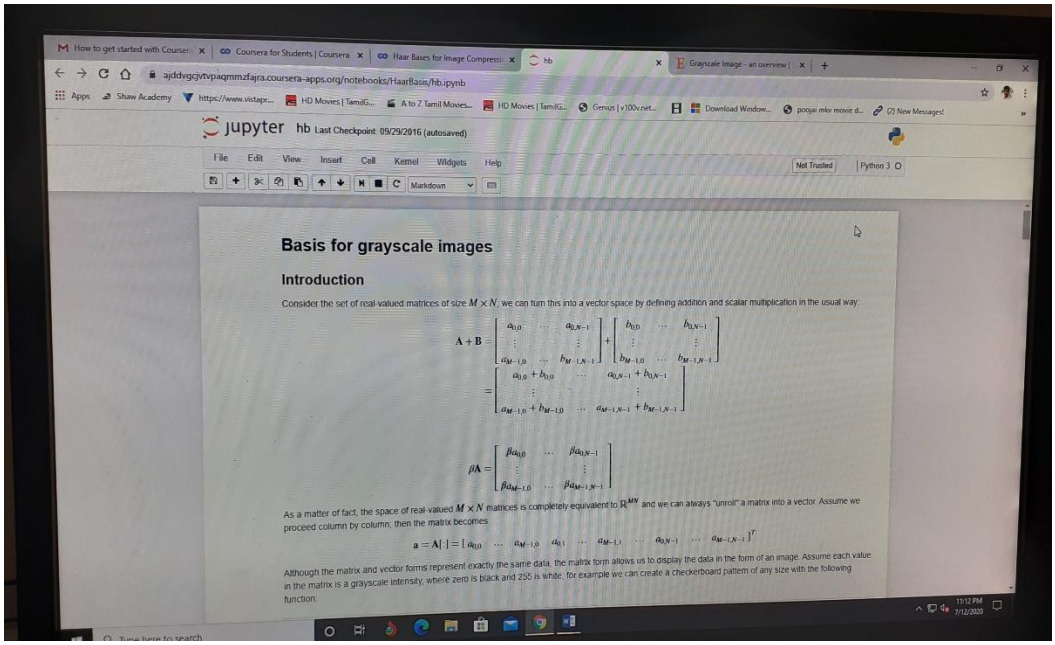
Most developed countries have significant work to do if they expect to reach their goals by 2030. The statistics on climate change, for example, may feel alarming. Despite progress, there are critical delays with regard to many of the SDGs throughout the world. The UN recently noted that the world is not on track to accomplish the SDGs by 2030.

The Sustainable Development Goals reflect our collective future. We all own them, and we must act now. Responsible Trailblazing outlines individual actions and activities that add up to collective impact. We've also provided some additional resources that will hopefully inspire you to continue to contribute toward achieving the SDGs.

AFTERNOON SESSION DETAILS

Date:	**11-7-2020**	**Name:**	**Kavyashree m**
Course:	**coursera**	**USN:**	**4al15ec036**
Topic:	**Digital signal processing : APPLICATIONS**	**Semester & Section:**	**8th A**
Github Repository:	**kavya**		

Image of session



Basis for grayscale images

Introduction

Consider the set of real-valued matrices of size $M\times N$; we can turn this into a vector space by defining addition and scalar multiplication in the usual way:

\begin{align}

```
\mathbf{A} + \mathbf{B} &=
  \left[
    \begin{array}{ccc}
      a_{0,0} & \dots & a_{0,N-1} \\
      \vdots & & \vdots \\
      a_{M-1,0} & \dots & b_{M-1,N-1}
    \end{array}
  \right]
  +
  \left[
    \begin{array}{ccc}
      b_{0,0} & \dots & b_{0,N-1} \\
      \vdots & & \vdots \\
      b_{M-1,0} & \dots & b_{M-1,N-1}
    \end{array}
  \right]
  \\
  &=
  \left[
    \begin{array}{ccc}
      a_{0,0}+b_{0,0} & \dots & a_{0,N-1}+b_{0,N-1} \\
      \vdots & & \vdots \\
      a_{M-1,0}+b_{M-1,0} & \dots & a_{M-1,N-1}+b_{M-1,N-1}
    \end{array}
  \right]
  \\ \\ \\
\beta\mathbf{A} &=
```

```
  \left[
    \begin{array}{ccc}
      \beta a_{0,0} & \dots & \beta a_{0,N-1} \\
      \vdots & & \vdots \\
      \beta a_{M-1,0} & \dots & \beta a_{M-1,N-1}
    \end{array}
  \right]
\end{align}
```

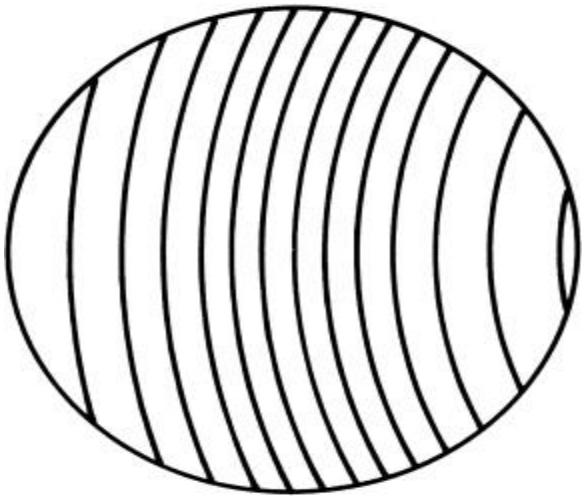
Generalization to Grayscale Images

To extend these results to grayscale images, first consider the effect of applying a median filter near a smooth step edge in l-D. Here the median filter gives zero shift, since for equal distances from the center to either end of the neighborhood there are equal numbers of higher and lower intensity values and hence equal areas under the corresponding portions of the intensity histogram. Clearly this is always valid where the intensity increases monotonically from one end of the neighborhood to the other a property first pointed out by Gallagher and Wise (1981)

Next, it is clear that for 2-D images, the situation is again unchanged in the vicinity of a straight edge, since the situation remains highly symmetrical. Hence the median filter gives zero shift, as in the binary case.

For curved boundaries, the situation has to be considered carefully for grayscale edges, which, unlike binary edges, have finite slope. When boundaries are roughly circular, contours of constant intensity often appear . To find how a median filter acts, we merely need to identify the contour of median intensity (in 2-D the median intensity value labels a whole contour) that divides the area of the neighborhood into two equal parts. The main difference here is that for every position of the neighborhood, there is a corresponding median contour with its own particular value of shift depending on the curvature.

Intriguingly, the formulae already deduced may immediately be applied for calculating the shift for each contour. Figure 3.17 shows an idealized case in which the contours of constant intensity have similar curvature, so that they are all moved inward by similar amounts. This means that, to a first approximation, the edges of the object retain their cross-sectional profile as it becomes smaller.



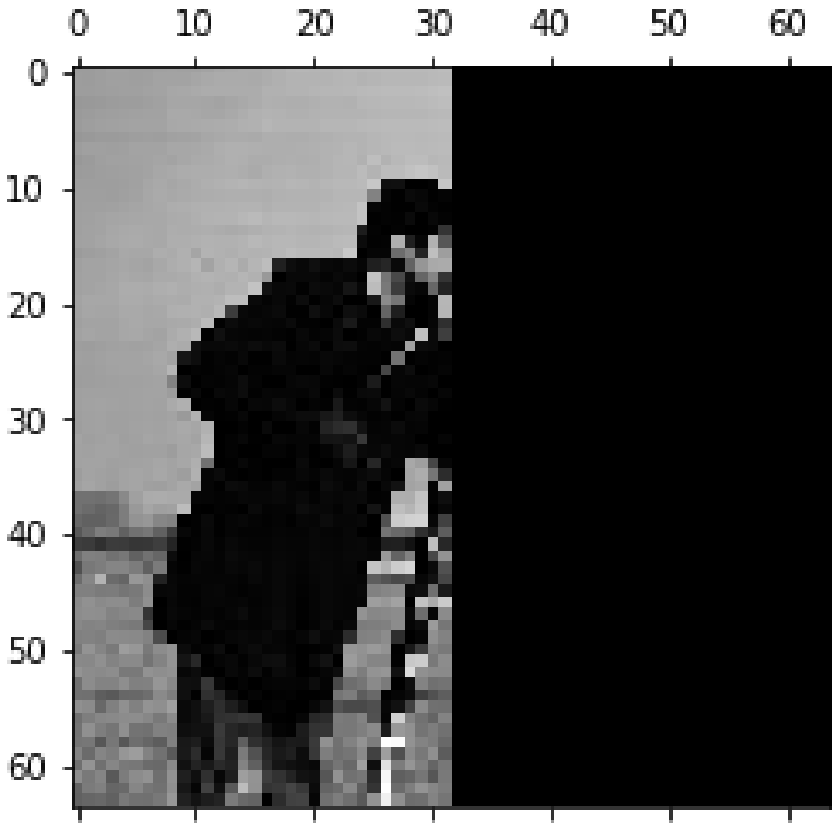
Transmitting images

Suppose we want to transmit the "cameraman" image over a communication channel. The intuitive way to do so is to send the pixel values one by one, which corresponds to sending the coefficients of the decomposition of the image over the canonical basis. So far, nothing complicated: to send the cameraman image, for instance, we will send 64×64=409664×64=4096 coefficients in a row.

Now suppose that a communication failure takes place after the first half of the pixels have been sent. The received data will allow us to display an approximation of the original image only. If we replace the missing data with zeros, here is what we would see, which is not very pretty:

```
# unrolling of the image for transmission (we go column by column, hence "F")
tx_img = np.ravel(img, "F")
# oops, we lose half the data
tx_img[int(len(tx_img)/2):] = 0
```

```
# rebuild matrix
rx_img = np.reshape(tx_img, (64, 64), "F")
plt.matshow(rx_img);
```



Can we come up with a trasmission scheme that is more robust in the face of channel loss? Interestingly, the answer is yes, and it involves a different, more versatile basis for the space of images. What we will do is the following:

- describe the Haar basis, a new basis for the image space
- project the image in the new basis
- transmit the projection coefficients
- rebuild the image using the basis vectors

We know a few things: if we choose an orthonormal basis, the analysis and synthesis formulas will be super easy (a simple inner product and a scalar multiplication

respectively). The trick is to find a basis that will be robust to the loss of some coefficients.

One such basis is the Haar basis. We cannot go into too many details in this notebook but, for the curious, a good starting point is here. Mathematical formulas aside, the Haar basis works by encoding the information in a hierarchical way: the first basis vectors encode the broad information and the higher coefficients encode the detail. First of all, to keep things simple, we will remain in the space of square matrices whose size is a power of two. The code to generate the Haar basis matrices is the following: first we generate a 1D Haar vector and then we obtain the basis matrices by taking the outer product of all possible 1D vectors (don't worry if it's not clear, the results are what's important):

```
def haar1D(n, SIZE):
    # check power of two
    if math.floor(math.log(SIZE) / math.log(2)) != math.log(SIZE) / math.log(2):
        print("Haar defined only for lengths that are a power of two")
        return None
    if n >= SIZE or n < 0:
        print("invalid Haar index")
        return None

    # zero basis vector
    if n == 0:
        return np.ones(SIZE)

    # express n > 1 as 2^p + q with p as large as possible;
    # then k = SIZE/2^p is the length of the support
    # and s = qk is the shift
```

```
    p = math.floor(math.log(n) / math.log(2))
    pp = int(pow(2, p))
    k = SIZE / pp
    s = (n - pp) * k

    h = np.zeros(SIZE)
    h[int(s):int(s+k/2)] = 1
    h[int(s+k/2):int(s+k)] = -1
    # these are not normalized
    return h

def haar2D(n, SIZE=8):
    # get horizontal and vertical indices
    hr = haar1D(n % SIZE, SIZE)
    hv = haar1D(int(n / SIZE), SIZE)
    # 2D Haar basis matrix is separable, so we can
    #  just take the column-row product
    H = np.outer(hr, hv)
    H = H / math.sqrt(np.sum(H * H))
    return H
```