

Cloud Computing Concepts

CS 3132

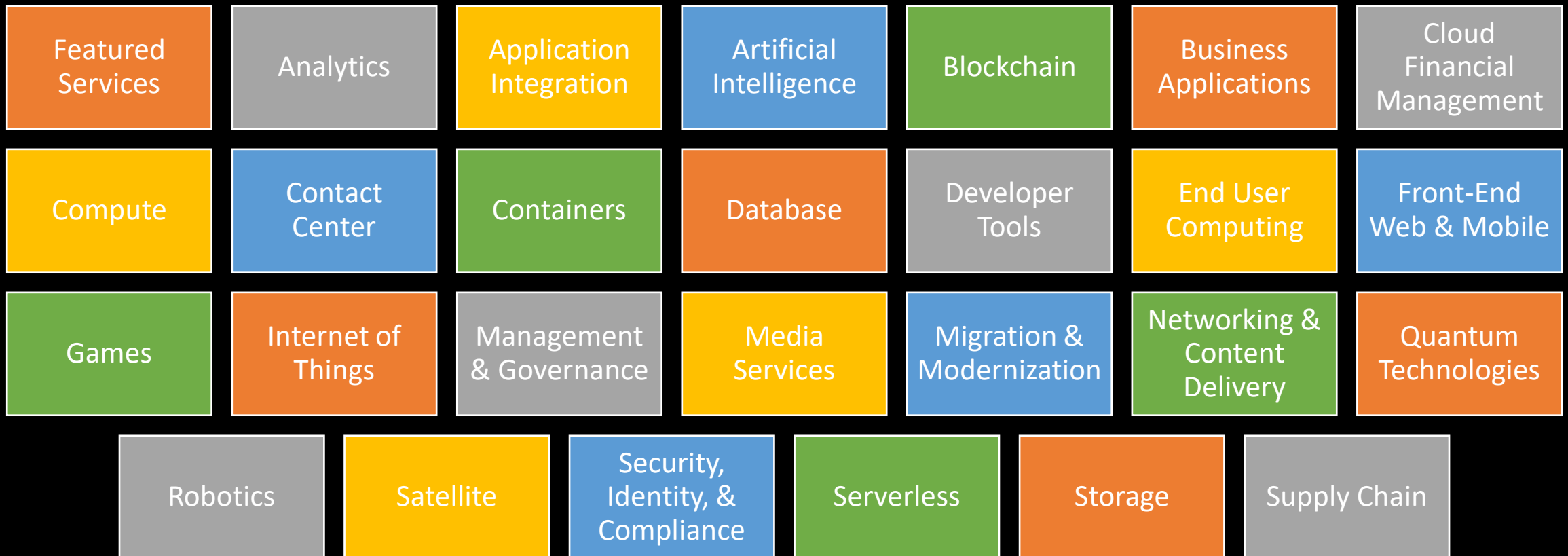
Dr. Anand Kumar Mishra

NIIT University

Services from:
Google Cloud,
AWS, Azure



AWS Products



AWS Products

Featured Services

Amazon EC2:
Virtual servers in the
cloud

Amazon Simple
Storage Service (S3):
Scalable storage in the
cloud

Amazon Aurora: High
performance managed
relational database with
full MySQL and
PostgreSQL compatibility

Amazon DynamoDB:
Managed NoSQL
database

Amazon RDS: Managed
relational database
service for PostgreSQL,
MySQL, MariaDB, SQL
Server, Oracle, and Db2

AWS Lambda: Run code
without thinking about
servers

Amazon VPC: Isolated
cloud resources

Amazon Lightsail: Launch
and manage virtual
private servers

Amazon SageMaker:
Build, train, and deploy
machine learning models
at scale

AWS Products

Amazon VPC: Isolated cloud resources

Amazon VPC Lattice: Simplify service-to-service connectivity, security, and monitoring

Amazon API Gateway: Build, deploy, and manage APIs

Amazon CloudFront: Global content delivery network

Amazon Route 53: Scalable domain name system (DNS)

AWS App Mesh: Monitor and control microservices

AWS Cloud Map: Service discovery for cloud resources

AWS Cloud WAN: Easily build, manage, and monitor global wide area networks

AWS Direct Connect: Dedicated network connection to AWS

AWS Global Accelerator: Improve application availability and performance

AWS Private 5G: Easily deploy, manage, and scale a private cellular network

AWS PrivateLink: Securely access services hosted on AWS

AWS Transit Gateway: Easily scale VPC and account connections

AWS Verified Access: Provide secure access to corporate applications without a VPN

AWS VPN: Securely access your network resources

Elastic Load Balancing (ELB): Distribute incoming traffic across multiple targets

AWS Products

Compute

Amazon EC2: Virtual servers in the cloud

Amazon EC2 Auto Scaling: Scale compute capacity to meet demand

Amazon Lightsail: Launch and manage virtual private servers

AWS App Runner: Build and run containerized web apps at scale

AWS Batch: Run batch jobs at any scale

AWS Elastic Beanstalk: Run and manage web apps

AWS Lambda: Run code without thinking about servers

AWS Local Zones: Run latency sensitive applications on a Local Zone

AWS Outposts: Run AWS infrastructure on-premises

AWS Parallel Computing Service: Easily run HPC workloads at virtually any scale

AWS Serverless Application Repository: Discover, deploy, and publish serverless applications

AWS SimSpace Weaver: Build dynamic, large-scale spatial simulations on AWS managed infrastructure

AWS Snow Family: Physical devices to aggregate and process data in edge locations, then transfer to AWS

AWS Wavelength: Deliver ultra-low latency applications for 5G devices

AWS Products

Storage

Amazon Simple Storage Service (S3): Scalable storage in the cloud

Amazon S3 Glacier storage classes: Low-cost archive storage in the cloud

Amazon Elastic Block Store (EBS): EC2 block storage volumes

Amazon Elastic File System (EFS): Fully managed file system for EC2

Amazon FSx for Lustre: High-performance file system integrated with S3

Amazon FSx for NetApp ONTAP: Fully managed storage built on NetApp's popular ONTAP file system

Amazon FSx for OpenZFS: Fully managed storage built on the popular OpenZFS file system

Amazon FSx for Windows File Server: Fully managed Windows native file system

Amazon File Cache: High-speed cache for datasets stored anywhere

AWS Backup: Centralized backup across AWS services

AWS Elastic Disaster Recovery (DRS): Scalable, cost-effective application recovery

AWS Snow Family: Physical edge computing and storage devices for rugged or disconnected environments

AWS Storage Gateway: Hybrid storage integration

Google Cloud

AI and
machine
learning

Compute

Storage

Databases

Data analytics

Networking

Developer
tools

Security

Google Cloud

Featured products

Compute Engine

Virtual machines running in Google's data center.

Cloud Storage

Object storage that's secure, durable, and scalable.

BigQuery

Data warehouse for business agility and insights.

Cloud Run

Fully managed environment for running containerized apps.

Google Kubernetes Engine

Managed environment for running containerized apps.

Vertex AI

Unified platform for ML models and generative AI.

Looker

Platform for BI, data applications, and embedded analytics.

Apigee API Management

Manage the full life cycle of APIs anywhere with visibility and control.

Cloud SQL

Relational database services for MySQL, PostgreSQL, and SQL Server.

Gemini for Google Cloud

New generation of AI assistants for developers, Google Cloud services, and applications.

Cloud CDN

Content delivery network for delivering web and video.

Cloud Run functions

Event-driven compute platform for cloud services and apps.

Google Cloud

AI and Machine Learning

Vertex AI Platform

Unified platform for training, hosting, and managing ML models.

Vertex AI Studio

Build, tune, and deploy foundation models on Vertex AI, including Gemini.

Vertex AI Agent Builder

Build and deploy agents grounded with Google Search and your organization's data.

Speech-to-Text

Speech recognition and transcription supporting 125 languages.

Vision AI

Custom and pre-trained models to detect objects, text, more.

Natural Language AI

Sentiment analysis and classification of unstructured text.

Video AI

Video classification and recognition using machine learning.

Vertex AI Notebooks

A single interface for your data, analytics, and machine learning workflow.

Vertex Explainable AI

Tools and frameworks to understand and interpret your machine learning models.

AutoML

Custom machine learning model training and development.

Dialogflow

Gemini for Google Cloud

New generation of AI assistants for developers, Google Cloud services, and applications.

Media Translation

Add dynamic audio translation directly to your content and applications.

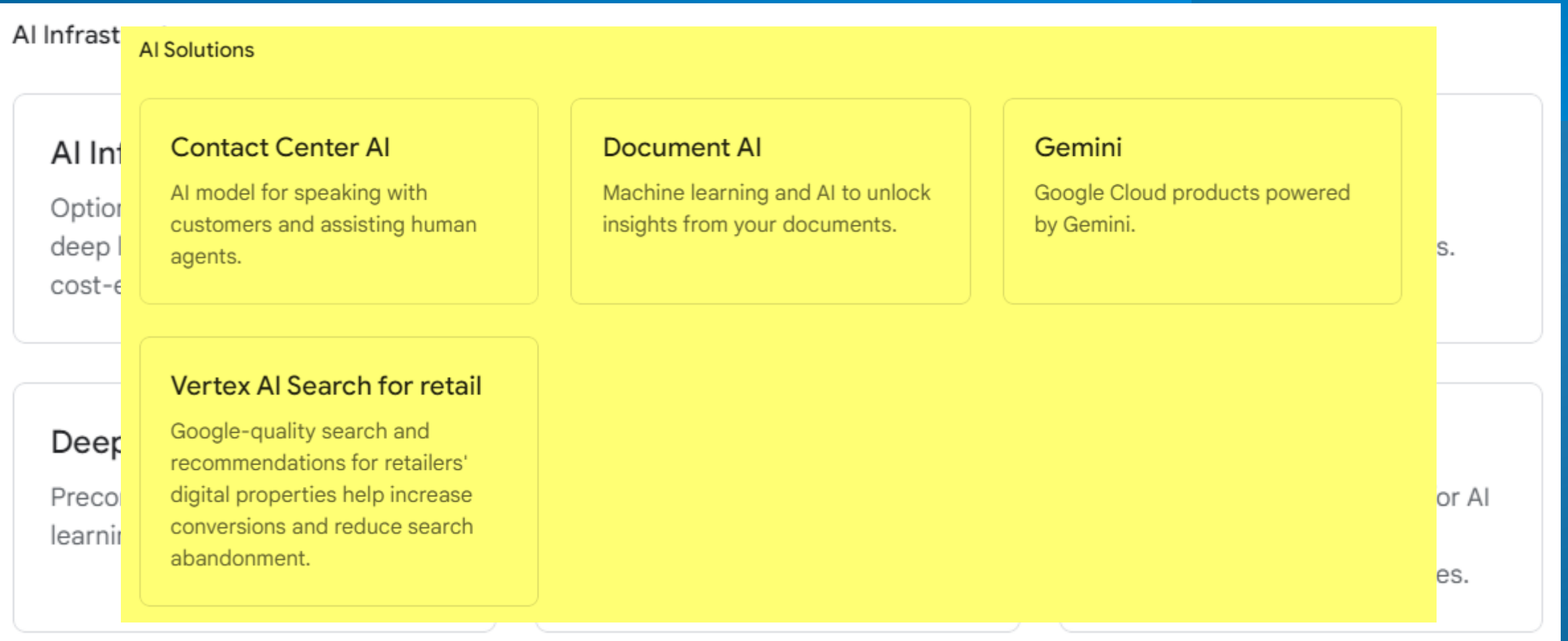
Recommendations AI

Deliver highly personalized product recommendations at scale.

Speech synthesis in 220+ voices and 40+ languages.

Translation AI

Language detection, translation, and glossary support.



The graphic features a large yellow rectangular area in the center, which serves as a background for four white-bordered boxes containing text about AI solutions. To the left of this yellow area, there are two white boxes with text, and to the right, there are two more white boxes. The overall layout is clean and modern, with a blue header and footer.

AI Solutions

Contact Center AI
AI model for speaking with customers and assisting human agents.

Document AI
Machine learning and AI to unlock insights from your documents.

Gemini
Google Cloud products powered by Gemini.

Vertex AI Search for retail
Google-quality search and recommendations for retailers' digital properties help increase conversions and reduce search abandonment.

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Compute

App Engine

Bare Metal Solution

Batch

Shielded VMs

Reinforced virtual machines on Google Cloud.

Sole-tenant Nodes

Dedicated hardware for compliance, licensing, and management.

Spot VMs

Compute instances for batch jobs and fault-tolerant workloads.

SQL Server on Google Cloud

Options for running SQL Server virtual machines on Google Cloud.

Tau VM

Compute Engine virtual machines optimized for scale-out workloads.

VMware Engine

Migrate and run your VMware workloads natively on Google Cloud.

Preconfigured VMs for deep learning applications.

Server and virtual machine migration to Compute Engine.

Proactive, easily actionable recommendations to keep your cloud optimized.

Microsoft Azure



Azure

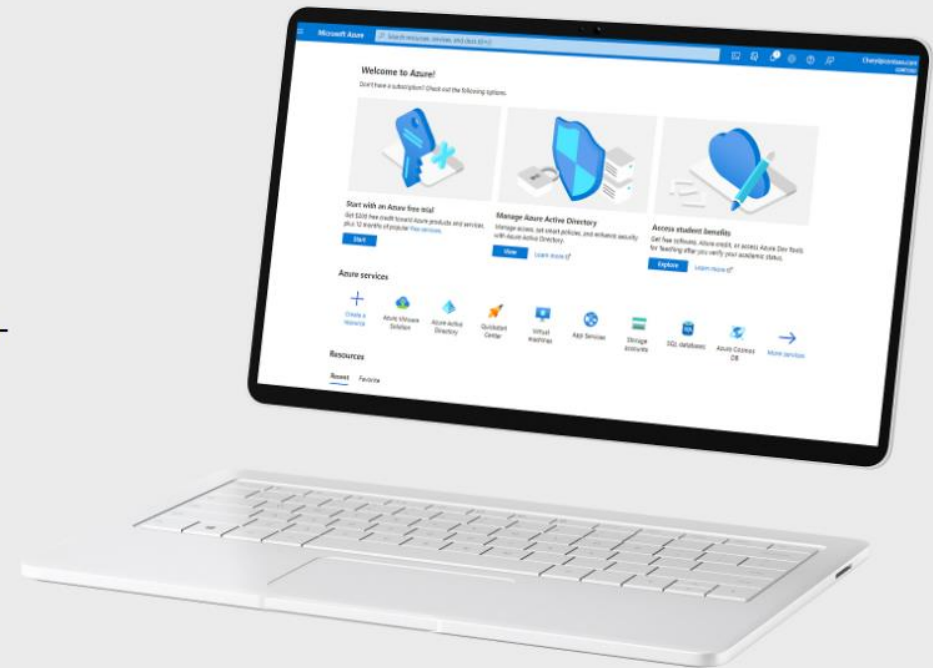
Get started with Azure

Build in the cloud with an Azure free account

Create, deploy, and manage applications across multiple clouds, on-premises, and at the edge

Start free

Pay as you go



12 Months



Azure Virtual Machines—Windows

750 hours each of B1s, B2pts v2 (Arm-based), and B2ats v2 (AMD-based) burstable VMs

12 Months



Azure Virtual Machines—Linux

750 hours each of B1s, B2pts v2 (Arm-based), and B2ats v2 (AMD-based) burstable VMs

Always



Azure SQL Database

100,000 vCore seconds of SQL database serverless usage per month with 32 GB of storage

12 Months



Azure Blob Storage

5 GB locally redundant storage (LRS) hot block with 20,000 read and 10,000 write operations

Always



Azure Cosmos DB

1,000 request units
per-second
provisioned
throughput with 25
GB storage

Always



Azure App Service

10 web, mobile, or
API apps with 1 GB
storage 1 hour per
day

Always



Azure Functions

1 million requests

Always



Azure Event Grid

100,000 operations
per month

Featured

AI + machine learning

Compute

Containers

Hybrid + multicloud

IoT



Azure Virtual Machines

Deploy VMs in seconds.

[Explore the product](#)



Azure Kubernetes Service (AKS)

Build and scale apps with managed Kubernetes.

[Explore the product](#)



Linux virtual machines in Azure

Provision VMs for Ubuntu, Red Hat, SUSE, and other popular distributions.

[Explore the product](#)



SQL Server on Azure Virtual Machines

Get industry-leading performance for SQL.

[Explore the product](#)



Windows Virtual Machines

Deploy scalable, protected virtualized infrastructure.

[Explore the product](#)



Azure Functions

Trigger apps with serverless computing.

[Explore the product](#)



Azure App Service

Expand apps to additional locations.

[Explore the product](#)